Covering the TI99/4A and the Myarc 9640

MICROpendium

Volume 6 Number 9 October 1989 $2.50

By George, she's got it

A presidential program by Regena

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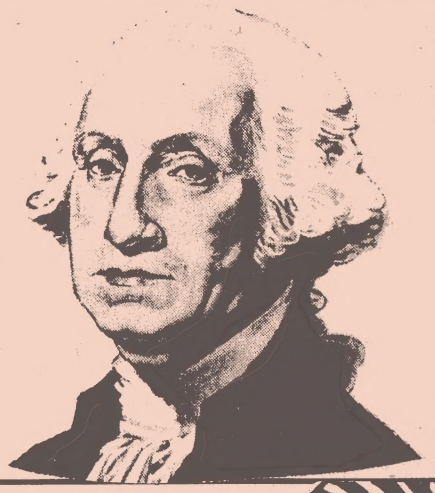

CATWRITER

For longer filenames

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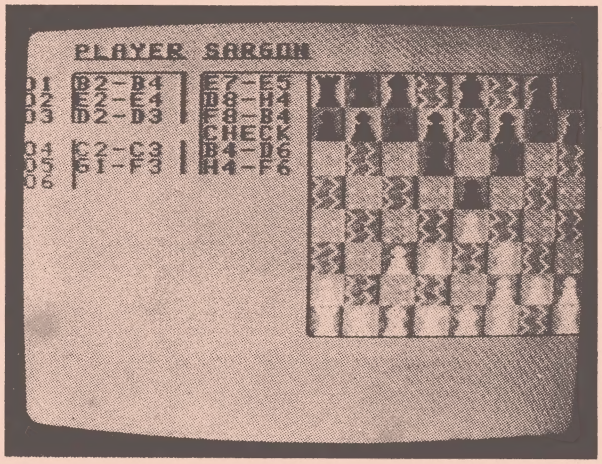

Playing the game

Sargon I

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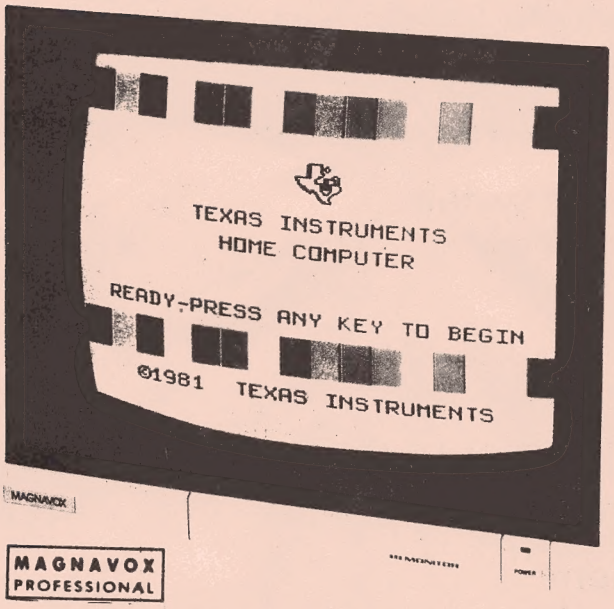

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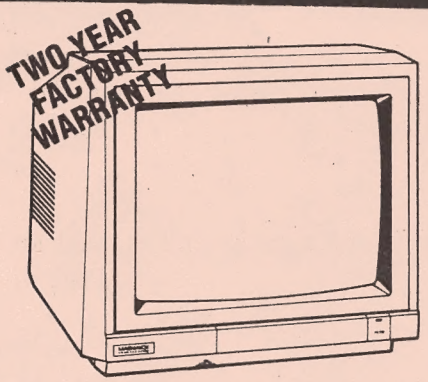

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MICROpendium

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Programming conventions

Here are some tips to help you when entering programs from MICROpendium:
1. All BASIC and Extended BASIC programs are run through Checksum, the numbers that follow exclamation at the end of each program line. Do not enter these numbers or exclamation points. Checksum was published in the October 1987 edition.
2. Long XBASIC lines are entered by inputting until the screen stops accepting characters, pressing Enter, pressing FCTN REDO, cursoring to the end of the line and continuing input.

Picasso 2.0

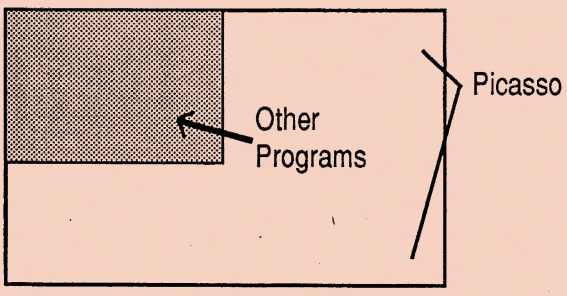
There are many drawing programs for the TI-99/4A, but Picasso 2.0 is more then just another drawing program, it is a publishing system them works with other drawing programs and utilities to allow you to create beautiful works for use in calendars, page-making programs and more.

Like many other drawing programs, Picasso also offers a full-range of functions. You can draw (or erase) with a variety of brushes in various sizes, draw lines, boxes, circles and rays, fill areas in any of 32 different patterns, move and copy parts of the picture (from within the program), change the cursor speed, type in fonts, and even invert, reverse and do a mirror image of an area. When you are finished, you can print out your picture in at whatever darkness you like, or save it for future use.

Unlike most other drawing programs your pictures aren't limited to what you can fit on a screen. A picture in Picasso can be up to 480x336 pixels - over 300% larger then a TI-Artist or GRAPHX screen and almost exactly half a page in size. This extra area lets you draw bigger pictures with better resolution then you can do in any other drawing program for the 99/4A. Creating your picture is a breeze in Picasso - you just move the cursor and the screen displays the part of the picture you are on.

Unlike others you can use a built-in font editor to create new fonts, draw with icons (almost like your own brush styles), zoom into an area instantly and move the zoom window over the entire document from within the zoom mode, load in text from TI-Writer files onto your screen, load in pictures created with TI-Artist or TI-Artist Plus and put them anywhere over the drawing area, and even "undo" mistakes at the touch of a key!

Picasso is the drawing program for someone who just wants to draw. While other programs have lots of special effects and font capabilities not found in Picasso, no other program is as natural to use by the computer artist, and none lets you get the job done as quickly. If you need to draw, you'll like Picasso.



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Picasso Support

Picasso Borders

A borders package for the Picasso drawing program - *Picasso Borders* contains over 60 beautiful borders! By Paul Scheidemantle. Requires Picasso 2.0, Disk, 32K

Disk - *$7.95*

Picasso Enlarger

A program to enlarge and reduce Picasso pictures, "ghost" a picture (make it appear "ghostly"), and import TI-Artist Instances directly into Picasso pictures. This utility package is a "must" for Picasso users! Requires Picasso, 32K, Extended BASIC and disk.

Disk - *$9.95*

Picasso Utilities

This package of utilities will let you get more out of Picasso! *Picasso Utilities* includes an External Print utility that prints "camera-ready", high-quality copies of your Picasso screens, as well as a utility for typing on your Picasso screens in large fonts. Requires Picasso, 32K, Extended BASIC, Disk and an Epson compatible printer.

Disk - *$9.95*

Using Picasso

The definitive book on using ALL versions of Picasso! This book, by well-known author Harry Brashear, tells you in depth, with many fascinating illustrations, how to use Picasso for everything from drawing to desktop publishing! Tells you about all the useful functions of the program too. An essential guide for Picasso users. 40 Pages. Requires a version of Picasso. Included with version 2.0

Text - *$5.95*

Comments

Will PRESS make its debut in Chicago?

A "final" version of Myarc's Advanced BASIC — now called MY-BASIC — is available for the Geneve 9640. Walt Howe has a report on it in this issue. The program was demonstrated at the TI-Expo in Washington, D.C. last month.

The MY-BASIC version that I have is numbered 2.99. The version that Myarc will send out to Geneve owners will no doubt carry a round number, such as 3.0. As noted last month, Geneve users who are unable to obtain the current "unofficially finalized" version of MY-BASIC (or V1.14 of MDOS or the currrent V.96H hard-disk version of MDOS) may send me a DSDD disk for all three. MY-BASIC and MDOS V1.14 will fit on a DSSD disk.

WILL PRESS DEBUT AT CHICAGO?

I wouldn't bet the farm on this, but after showing an unfinished version of PRESS at the TI-Expo (see report in this issue), Asgard's Chris Bobbitt is hopeful that a full, working version of the long-awaited word processor will be available in time for the Chicago TI Faire Nov. 4. You will remember that PRESS was introduced at last year's Chicago fair amid great fanfare. Asgard had the documentation already printed and took orders only to run into the kinds of problems that plague virtually every software developer in this country, regardless of what type of machine is used.

Will Asgard be able to surmount the problems that even giant companies such as Lotus Corp. struggle with? Wouldn't it be nice if it could?

DISK VOLUME FOR 1988 AVAILABLE

This spring we began offering monthly disks containing programs from each issue of MICROpendium. The cost to receive these monthly disks is $40 per year. The current "year" runs from April 1989 to March 1990.

A second year of disks is now available, running from April 1988 to March 1989. The cost of the volume, which includes 12 SSSD disks, is $40.

COST OF MAGAZINE SUBSCRIPTION NOW $25

Just a note: As of Oct. 16, MICROpendium subscriptions in the U.S. are $25 per year. The cover price increases to $2.50 per copy. Increases of $5 per year also affect subscriptions mailed to Canada, foreign surface and and airmail. This is the first price increase we've had in more than two years.

MORE ON CHICAGO FAIR

The weekend of Nov. 4-5 will be a busy one for TI users in the Chicago-Milwaukee area. The Chicago TI Faire is scheduled from 9 a.m. to 5 p.m. Saturday, Nov. 4, at the Holiday Inn in Rolling Meadows. The next day, the Milwaukee TI Faire will be held from 9 a.m. to 5 p.m. at the Quality Inn. There will be exhibits, discussions, plenty of vendors and lots of TI enthusiasts. The weekend is billed as TI Faire Weekend. If you're in the neighborhood, check it out.

SERIES ABOUT EXPANDING SYSTEMS

I'm starting a series this month aimed at helping users who want to expand their systems. This month's installment focuses on the bare essentials for a Basic Expanded System.

I want the focus to be on affordability, how to get more bang for the buck when expanding. I know there are great deals to be had for those who have the time to look for them. Some of the deals will be through advertisers in MICROpendium. Other deals will come from flea markets, Goodwill stores and computer fairs.

Several months ago Jim Horn of Disk Only Software started a movement to get people to donate their unused TI equipment to schools. According to Jim, having the equipment in a place where it can be used by students, regardless of their age, is a positive step for the TI community.

Likewise, there are a lot of TI users who don't have a PEB or similar system and have to make do with a console and, perhaps, an Extended BASIC cartridge. Many would like to move up to a PEB but either can't afford it or don't know exactly where to begin. For those who don't know where to begin, this series is a place to start.

For those who can't afford it, the problem is locating the best deals possible. I know it is possible to obtain a used system that includes a PEB, disk drive and memory expansion for about $100. But you have to have the time and dedication to find it.

Of course there is a risk when purchasing used equipment. It could turn out to be unusable, and usually those who have the least amount of equipment also have the least knowledge when it comes to evaluating equipment.

At this point, I don't know what the solution is. But if we can donate used equipment to schools there must be a way we can help those already in the TI community who really want to obtain it but simply can't afford to buy new.

I'm open to suggestions.

—JK

THE GENEVE 9640 HAS LANDED

You will recognize it by its trade mark, a graceful gray swan swimming on blue water, an apt symbol. The ugly duckling TI no longer wanted, is no ugly duckling anymore. The GENEVE has surpassed everyones expectations, even our own; with power, speed, graphics, and adaptibility not found in other microcomputers. In fact, the GENEVE does so much, this ad can only begin to tell you about it.

- **Near 100% Compatible:**
  — If you have a program written in Basic, Extended Basic, XBII, Assembly Language, Forth, Pascal, you name it, if it runs on the 99/4A then it is near certain to run on the GENEVE.
- **32K No Wait State High Speed RAM:**
  — Programs like MultiPlan, which are painfully slow on the 99/4A, run many times faster, thanks in part to the High Speed RAM.
- **V9938 Video Processor with 7 Graphics Modes:**
  — Compatible with the 99/4A so you can use the GENEVE with the TV or monitor you are currently using. Same resolution as the Mac but with color. Faster than the Amiga, as fast as the Atari and does it with the aspect ratio something the Amiga and IBM AT can not do. Aspect ratio renders higher resolution, better color, and appearance through the use of square pixels. In the high resolution mode, 256 colors may be displayed on the screen at one time by the GENEVE, eight times as many as the Amiga can display in its high resolution mode.
- **Mouse Interface:**
  The mouse interface is built in and ready to use with the MYARC mouse. But, we didn't stop there, it is also ready to support the newest hardware, like video digitzers, and that's just for starters.
- **6 Complete Pieces Of Software Are Included WithThe GENEVE. But, three you will not be able to see how you ever did without are:**
  — My-Word Processor; 80 columns, help screens for all modes of operation including control-U, initialize a disk without leaving the program, print formatted text to the screen for viewing before sending it to the printer and that's still not all My-Word will do.
  — Advanced Basic; the best and most powerful basic on the market today.
  — Pascal V4.21; if you have a standard USCD Pascal program, you will be able to run it with this program. If you do not have any Pascal programs, let me tell you, one of the largest library of programs available, is Pascal. Compilers for Fortran, Modula 2, Lisp, and Pilot, as well as business programs from A to Z, are all there. USCD Pascal Software developed for computers from Apple to IBM, will run on the GENEVE, without modification.

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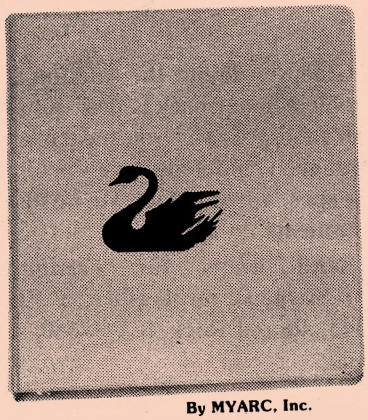

By MYARC, Inc.

If you have heard enough, contact your MYARC dealer, they have one in stock for you. If you do not know who your stocking MYARC dealers are, or, if you want to know more about the GENEVE, telephone the number listed below, or mail your name and complete address with zip code to the address shown below.We will be happy to mail you a brochure covering the GENEVE in detail and a list of our stocking dealers. Supplies of the brochure are limited, so please hurry.

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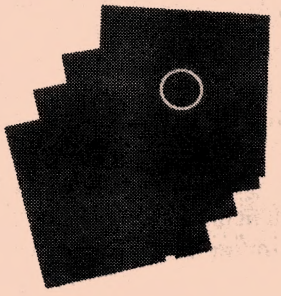
(205) 854-5843



Feedback

Line to the dump

To get the dump subroutine starting at line 31195 in the article "Sending it to the dump" by Jerry Stern (June 1989) to print correctly, it seems to me that an additional line at 31206 is needed similar to the author's line 29295 in his other dump subroutine, i.e. add line:

31206 IF X<32 THEN X=32

Tom Wilmot
Winona, Minnesota

User Group Listing shipment delayed

My personal "thank you" to both MICROpendium and Harry Brashear for giving my User Group Listing offer a recent "plug."

And now, some sincere apologies must be made to all the people who generously sent their money for a copy of the listing. I got involved in some other, work-related projects about the time orders started coming in. I was hard-pressed just to get out a monthly newsletter for our group; lack of time put the "Master User Group Listing" on a temporary back burner. Things have slowed up and I think I got caught up on everything. If you ordered a list before August '89 and still have not received your copy, please drop me a line.

The future of the "M.U.G.L." looks good; Version 2.0 should be available before Christmas. As promised, the update will also include other important addresses and information as well as an update of the user groups.

A couple of guidelines will also speed up your order: 1) Specify your disk capacity (SS/SD, etc.); 2) specify the format you want your list in. On disk, the list is available in either TI-Base (V2.0 or newer), CFS or TI-Writer formats. Because of a limitation of 80 columns with TI-Writer, the entire listing contains three parts per file to include all information contained in the database files. Or you can have the listing already printed and skip the disks. If you order both a hard-copy listing and a disk copy, an extra $1 would be appreciated to cover the additional cost. All three file formats will fit on one DS/SD disk; any combination of two file formats will fit on one SS/SD disk, in compressed archived files. If your order requires two or more disks, $1 extra would help here, too. And an extra $1 for foreign (overseas only) would hel, too. I'm only asking $5 as a fairware donation/request. After costs, profits go to keeping our user group alive!

Please send all orders, changes, addition, etc. to Andi Wise, c/o Eugene 99/4A U.G., P.O. Box 11313, Eugene, OR 97405. Our group is going to be closing its checking account soon, so please make checks or money orders payable to me.

I thank everyone for the support for the project.

Andi Wise
Eugene 99/4A Users Group Newsletter Editor
Eugene, Oregon

White shadows flee

When I replaced the TV I was using for my 99/4A with a monitor, screen sharpness improved but I still had a lot of white "shadows" around the text letters, which I had hoped would be gone using the monitor.

Later on, while looking for something else, I ran across a listing in the index I had forgotten about, a User note on page 44 of MICROpendium for October '87 about upgrading the video signal. The item was by Bob Lawson of the West Penn 99ers, and he was writing about the white shadows that were bothering me.

Just change a resistor, says Bob, and the white shadows will flee away! Sounded good to me, and above all, easy. Also I had the resistor I needed, and I had a *small* soldering pencil (too much heat plays hob with the printed circuits in the console) and I had low melting point rosin core solder, a must for electronics soldering.

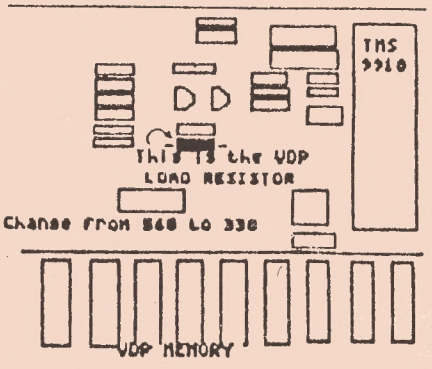
Bob's drawing pinpointed the 560 ohm resistor I needed to change out. The resistor on the chassis was ⅛-watt, but there was plenty of room for the quarter-watt 330 ohm job I had, and it's OK to go to higher wattage in these cases.

Everything worked as advertised, the monitor video is sharper still and there are *no* white shadows. I'm puzzled — I have seen no comments about this anywhere, no letters in Feedback or anything. Could it be that I'm the only one who has tried it? Bob promised a 40 percent improvement, whatever *that* means, but this is dramatic, and just what I need for the 80-column card I hope to acquire.

I want to emphasize the last paragraph of Bob's note — this is not a procedure for the uncertain. If that's you, get a friend to do it. And thank you, Bob Lawson!

(After writing the above, I found a note that Tex-Comp had included with my new monitor, which was a reprint of the '87 User Note — more of Jerry Price's good service.)

Elton Schooling
Sacramento, California



Modem hooked up

I'd just like to thank you guys for your Avatex 1200 modem review (July 1987). Ed Johnson and I were trying to get my modem to work. He was on the phone with a friend, and I browsed through some of your issues. Then I saw your review and the wiring diagrams. It was just our luck we found it. Thanks. By the way, how come a CorComp 32K standalone and a speech synthesizer can't work with each other? The one next to the TI is the only one that works.

Ryan Waltrip
St. Paul, Minnesota

Glad you found the solution to your problem in our back issues. However, we can't tell you why you have a problem with the standalone unit working with the speech synthesizer. We invite reader comments on this.—Ed.

Send items for *Feedback* to MICROpendium Feedback; P.O. Box 1343; Round Rock, TX 78680.

REGENA ON BASIC

Let's see, first Washington, then . . .

By REGENA

How long has it been since you reviewed the presidents of the United States? I had forgotten those once-familiar names from school history classes until one of my children was reviewing history. This month's program is a way to review the presidents' names and the years they served.

This program has a basic "hangman" idea, and you may add your own graphics and sound if you like. The 41 presidents are included (I count Grover Cleveland as number 22 and number 24). A president is chosen at random, and blanks for each letter in his name are shown on the screen. Press a letter. If it is in the name, it will be shown where it belongs. If the letter is not in the name, the letter guessed will be shown at the bottome of the screen. Try to guess the correct letters for the name before 10 incorrect letters have been chosen. The correct president will be shown if the eleventh letter is incorrect.

The first selection of the program has you guess the president, but the president's number and the years he served are shown. The second selection of the program is similar but no numbers are given. You must choose letters and numbers to show the number of the president, the president's name and the years he served.

Line 120 DIMensions arrays P$ and Y$ for the presidents' names and the years and K$ for keeping track of the 26 letters. Line 130 defines NP=41 for the number of presidents. When you need to adapt this program for presidents after George Bush, add to the DIMension statement and the value of NP, then add the presidents and years at the end of the DATA statements.

Lines 140-200 print the title screen while variables are defined. ROW is the row number that the president's name is on so letters may be printed on the screen. Lines 210-330 contain the DATA statements with the presidents in order and each president's name followed by his years in service. Lines 340-360 READ in the information for P$ and Y$ for the 41 presidents.

Lines 370-450 print the selectons for the quiz and branch according to the key pressed. K is the ASCII code of the key pressed, and CH is 1 or 2 for the choice made.

Lines 460-530 redefine the colors for the letters and numbers — black on yellow for letters and numbers to be chosen and black on light red for the incorrect letters. Line 540 says for the computer to perform the quiz for the 41 presidents.

Lines 550-610 initialize strings K$ and N$ for the letters and numbers chosen to keep track if a letter or number has been used. Line 620-640 randomly choose a president thata has not previously been guessed correctly. Lines 650-690 initialize variables. PR$ is the president's name, and YR$ is the years served. CC is a column number used in printing the incorrect letters. LP is the length or number of letters in the president's name. NL is initialized to zero and will be the number of letters as they are chosen correctly for the name.

Lines 700-800 print the number of the president if the choice was for the first type of quiz, or blanks for the number if the choice was for the second type of quiz. R$ is the string value of R or the number of the president chosen. LR is the number or digits in R$, and NR is the number of characters as they are chosen correctly. CN is a column for printing this number.

Lines 810-870 print blanks appropriately for the president's name. Spaces are inserted to divide the first name, initial or middle name, and last name. NL is the number of letters correctly chosen and is incremented for spaces inserted here.

Lines 880-980 print the years if they are to be shown or blanks for the years if the user needs to guess. LY is the length of the years YR$, and NY is the number of correct letters as they are guessed. A hyphen is printed if more than one year is shown for years served.

Line 990 sounds a beep, then Lines 1000-1030 wait for the user to press a key, making sure that only letters and numbers are acknowledged (either with or without the alpha lock key down). Line 1040 sets a flag F to zero, and Lines 1050-1060 compensate for a lowercase letter being pressed.

Lines 1070-1330 are used if a number may be pressed. Both the president number and the years are checked to see if the number chosen should be shown on the screen. Incorrect numbers are shown at the bottom of the screen, and a low "uh-oh" sound occurs.

Lines 1340-1460 check if a letter pressed is contained in the president's name; if so, the letter is shown in its proper place. When a number or letter is chosen correctly, F is set equal to 1 and the NR, NY or NL value is incremented once for each time the number or letter is used. N$ or K$ is set to " " so that number or letter is ignored if chosen again. Lines 1470-1500 print the letter if it is not contained in the name. Lines 1510-1560 print the president's name if more than 10 letters are guessed incorrectly. If you wish to change this value (for example, allow fewer incorrect letters), change the 25 in Line 1510. The column number CC is increased by 2 for each one incorrect letter.

When the president's name is completed (and number and years if applicable), Lines 1570-1600 sound an arpeggio, and Line 1610sets P$(r)=" " so that president's name will not be chosen again. Line 1620 repeats the procedure for the next name until all 41 have been chosen randomly and correctly completed. If the name is not guessed and the answer is shown, that president's name will reappear later.

After all the presidents are completed, Lines 1630-1670 clear the screen, reset the colors back to black on screen color, and a message is printed. (Add your own graphics and message here if you wish.) Lines 1680-1710 offer the option of trying again and branch appropriately. Line 1720 clears the screen, and Line 1730 ends the program.

The idea for this program may be adapted for other subjects. You may use other historic events with years. You may use famous people in other categories (without years and numbers). You may use spelling words or vocabulary words. You could try classic literature titles and authors. Go ahead — make your own program!

If you wish to save typing effort and want a copy of this program, you may request one by sending $4 to *REGENA, 918 Cedar Knolls West, Cedar City, UT 84720.* Be sure to specify that you need the TI version of "Presidents" and whether you want cassette or diskette.

REGENA ON BASIC—

```
100 REM PRESIDENTS !219
110 REM BY REGENA !071
120 DIM P$(41),Y$(41),K$(26)
!039
130 NP=41 !139
140 CALL CLEAR !209
150 PRINT TAB(6);"THE PRESID
ENTS" !143
160 PRINT TAB(10);"OF THE" !
071
170 PRINT TAB(6);"UNITED STA
TES" !073
180 PRINT : :"CHOOSE LETTERS
 ONE AT A TIMETO FILL IN THE
 BLANKS." !021
190 ROW=13 !228
200 PRINT :"TRY TO GUESS THE
 PRESIDENT  BEFORE YOU HAVE
TEN WRONG  LETTERS." !073
210 RESTORE 220 !057
220 DATA GEORGE WASHINGTON,1
789-1797,JOHN ADAMS,1797-180
1,THOMAS JEFFERSON,1801-1809
,JAMES MADISON,1809-1817 !01
9
230 DATA JAMES MONROE,1817-1
825,JOHN QUINCY ADAMS,1825-1
829,ANDREW JACKSON,1829-1837
,MARTIN VAN BUREN,1837-1841
!188
240 DATA WILLIAM HENRY HARRI
SON,1841,JOHN TYLER,1841-184
5,JAMES KNOX POLK,1845-1849,
ZACHARY TAYLOR,1849-1850 !16
2
250 DATA MILLARD FILLMORE,18
50-1853,FRANKLIN PIERCE,1853
-1857,JAMES BUCHANAN,1857-18
61 !247
260 DATA ABRAHAM LINCOLN,186
1-1865,ANDREW JOHNSON,1865-1
869,ULYSSES S GRANT,1869-187
7 !241
270 DATA RUTHERFORD B HAYES,
1877-1881,JAMES A GARFIELD,1
881,CHESTER ALAN ARTHUR,1881
-1885 !250
280 DATA GROVER CLEVELAND,18
85-1889,BENJAMIN HARRISON,18
89-1893,GROVER CLEVELAND,189
3-1897 !114
290 DATA WILLIAM MCKINLEY,18
97-1901,THEODORE ROOSEVELT,1
901-1909,WILLIAM HOWARD TAFT
,1909-1913 !135
300 DATA WOODROW WILSON,1913
-1921,WARREN G HARDING,1921-
1923,CALVIN COOLIDGE,1923-19
29,HERBERT HOOVER,1929-1933
!237
310 DATA FRANKLIN DELANO ROO
SEVELT,1933-1945,HARRY S TRU
MAN,1945-1953,DWIGHT DAVID E
ISENHOWER,1953-1961 !240
320 DATA JOHN F KENNEDY,1961
-1963,LYNDON B JOHNSON,1963-
1969,RICHARD M NIXON,1969-19
74,GERALD FORD,1974-1977 !18
7
330 DATA JIMMY CARTER,1977-1
981,RONALD REAGAN,1981-1989,
GEORGE BUSH,1989- !184
340 FOR C=1 TO 41 !103
350 READ P$(C),Y$(C)!155
360 NEXT C !217
370 PRINT : :"CHOOSE:": :!05
7
380 PRINT "1  YEAR GIVEN" !1
71
390 PRINT "2  YEAR NOT GIVEN
" !193
400 PRINT "3  END PROGRAM":
: :!018
410 CALL KEY(0,K,S)!187
420 IF (K<49)+(K>51)THEN 410
 !175
430 CALL CLEAR !209
440 IF K=51 THEN 1730 !254
450 CH=K-48 !140
460 FOR C=5 TO 8 !061
470 CALL COLOR(C,2,12)!039
480 CALL COLOR(C+4,2,10)!227
490 NEXT C !217
500 IF CH=1 THEN 540 !094
510 FOR C=2 TO 4 !054
520 CALL COLOR(C,2,12)!039
530 NEXT C !217
540 FOR T=1 TO NP !231
550 FOR C=1 TO 26 !106
560 K$(C)=CHR$(C+64)!088
570 NEXT C !217
580 CALL CLEAR !209
590 FOR C=0 TO 9 !057
600 N$(C)=STR$(C)!107
610 NEXT C !217
620 RANDOMIZE !149
630 R=INT(NP*RND+1)!063
640 IF P$(R)="" THEN 630 !04
5
650 PR$=P$(R)!183
660 YR$=Y$(R)!201
670 CC=4 !065
680 LP=LEN(PR$)!098
690 NL=0 !081
700 IF CH=2 THEN 730 !029
710 PRINT R: : : :!194
720 GOTO 810 !124
730 R$=STR$(R)!206
740 LR=LEN(R$)!020
750 NR=0 !087
760 CN=4 !076
770 FOR C=1 TO LR !214
780 PRINT "_";!119
790 NEXT C !217
800 PRINT : : : :!112
810 CALL HCHAR(24,6,95,LP)!0
89
820 FOR B=1 TO LP !211
830 IF ASC(SEG$(PR$,B,1))<>3
2 THEN 860 !000
840 CALL HCHAR(24,5+B,32)!00
3
850 NL=NL+1 !173
860 NEXT B !216
870 PRINT : : : :!112
880 IF CH=2 THEN 910 !210
890 PRINT TAB(8);YR$ !137
900 GOTO 980 !038
910 LY=LEN(YR$)!116
920 NY=0 !094
930 CALL HCHAR(24,8,95,LY)!1
00
940 IF LY<5 THEN 970 !044
950 CALL HCHAR(24,12,45)!051
960 NY=1 !095
970 PRINT !156
980 PRINT : : : : : :!218
990 CALL SOUND(100,1000,2)!1
70
1000 CALL KEY(0,K,S)!187
1010 IF (K<48)+(K>122)THEN 1
000 !046
1020 IF (K>57)+(K<65)=-2 THE
N 1000 !126
1030 IF (K>90)+(K<97)=-2 THE
N 1000 !128
1040 F=0 !253
1050 IF K<97 THEN 1070 !115
1060 K=K-32 !069
1070 IF CH=1 THEN 1340 !129
1080 IF K>57 THEN 1350 !137
1090 F=0 !253
1100 IF (NR=LR)+(NY=LY)=-2 T
HEN 990 !250
1110 IF N$(K-48)="" THEN 990
 !133
1120 IF NR=LR THEN 1200 !173
```

(See Page 11)

BASIC—

(Continued from Page 10)

```
113Ø FOR B=1 TO LR !213
114Ø IF ASC(SEG$(R$,B,1))<>K
 THEN 118Ø !Ø13
115Ø CALL HCHAR(ROW-4,2+B,K)
!163
116Ø F=1 !254
117Ø NR=NR+1 !185
118Ø NEXT B !216
119Ø IF NY=LY THEN 126Ø !247
12ØØ FOR B=1 TO LY !22Ø
121Ø IF ASC(SEG$(YR$,B,1))<>
K THEN 125Ø !172
122Ø CALL HCHAR(ROW+4,7+B,K)
!167
123Ø F=1 !254
124Ø NY=NY+1 !199
125Ø NEXT B !216
126Ø N$(K-48)="" !167
127Ø IF (NY=LY)+(NR=LR)+(NL=
LP)=-3 THEN 157Ø !1ØØ
128Ø IF F=1 THEN 99Ø !22Ø
129Ø CN=CN+2 !156
13ØØ CALL HCHAR(24,CN,K)!175
1315 CALL SOUND(1ØØ,165,2)!1
32
132Ø CALL SOUND(1ØØ,131,2)!1
25
133Ø GOTO 1ØØØ !Ø58
134Ø IF K<65 THEN 1ØØØ !Ø39
135Ø IF K$(K-64)="" THEN 99Ø
 !128
136Ø FOR B=1 TO LP !211
137Ø IF ASC(SEG$(PR$,B,1))<>
K THEN 141Ø !Ø68
138Ø CALL HCHAR(ROW,5+B,K)!2
31
139Ø F=1 !254
14ØØ NL=NL+1 !173
141Ø NEXT B !216
142Ø K$(K-64)="" !162
143Ø IF (NL=LP)+(CH=1)=-2 TH
EN 157Ø !114
144Ø IF (NL=LP)+(NY=LY)+(NR=
LR)=-3 THEN 157Ø !1ØØ
145Ø IF NL=LP THEN 99Ø !21Ø
146Ø IF F=1 THEN 99Ø !22Ø
147Ø CC=CC+2 !134
148Ø CALL HCHAR(23,CC,K+32)!
147
149Ø CALL SOUND(1ØØ,165,2)!1
32
15ØØ CALL SOUND(1ØØ,131,2)!1
25
151Ø IF CC<25 THEN 1ØØØ !Ø94
152Ø PRINT :"THE PRESIDENT I
S" !147
153Ø PRINT : :PR$ !2Ø4
154Ø PRINT : :"PRESS <ENTER>
 TO CONTINUE.";!182
155Ø CALL KEY(Ø,K,S)!187
156Ø IF K=13 THEN 55Ø ELSE 1
55Ø !186
157Ø CALL SOUND(1ØØ,262,2)!1
3Ø
158Ø CALL SOUND(1ØØ,33Ø,2)!1
26
159Ø CALL SOUND(1ØØ,392,2)!1
34
16ØØ CALL SOUND(2ØØ,523,2)!1
31
161Ø P$(R)="" !184
162Ø NEXT T !234
163Ø CALL CLEAR !2Ø9
164Ø FOR C=2 TO 8 !Ø58
165Ø CALL COLOR(C,2,1)!244
166Ø NEXT C !217
167Ø PRINT "GOOD WORK!!" !Ø6
Ø
168Ø PRINT :"TRY AGAIN? (Y/N
)" !Ø45
169Ø CALL KEY(Ø,K,S)!187
17ØØ IF (K=89)+(K=121)THEN 1
4Ø !2Ø8
171Ø IF (K<>78)+(K<>11Ø)THEN
 169Ø !Ø98
172Ø CALL CLEAR !2Ø9
173Ø END !139
```

EXTENDED BASIC

Getting it right side up... and down

By JERRY L. STERN
©1989 J.L. Stern

Now that the weather is chilling down, I seem to have lost my excuses. I can no longer say that it's too beautiful a day to go inside and work. The plants need help No, did that last week. Maybe the lawn Mowed, already. I could prune the roses No, they're all set for winter, too. Hmmm... I might just have to go do that dreaded exercise, that project that never ends, getting organized.

I've accumulated piles of printouts of documentation for loads of software, including fairware, shareware, freeware, expensiveware, and clippings from magazines, newspapers, and product announcements. Some of these will go into folders and hang or slide down into the file cabinet. The best ones will be punched and placed in three ring binders by topic. Both the file folders and the dividers in the notebooks will need labels. Must be plenty of new files this time; I might as well thread the address labels into the printer and do them right.

I prefer to label both the front and back of the tabs on folders and dividers. Especially on dividers, having the label on both sides is convenient. It's also neat; folding the label over the top of the tab lines them up easily, and no gummy edges face upwards. But that could be a problem; if I wrap the label, the printer will have to print the file title first for the back of the folder upside down, then space a little, and then print it again right side up. The title has to be bigger than normal text, too, and the titles must line up together.

FILELABEL is set up for standard address labels. These are the tractor feed kind, 3½ by 15/16 inches. Not every printer can use them; check the manual!

Generally, printers with adjustable width tractor feed sprocket wheels but no sheet feeders can print labels. Some sheet feeder or pressure rollers can handle them, but not all, so, again, check the manual! When using labels in a printer, you should know in advance that some of them will be wasted. That will happen when you unthread them and replace the regular paper in the printer, because you must NEVER PULL OR ROLL LABELS BACKWARDS THROUGH ANY PRINTER! That immediately causes all the stickers to peel off

(See Page 12)

EXTENDED BASIC—

(Continued from Page 11)

the backing paper and adhere themselves with gluey tenacity to your most unreachable printer parts. Other than those few cautions, most of you will have no problems with printing labels.

It would be a shame to write a complex graphics program for an application like this, and then not be able to apply the techniques to other projects. The main program portion of FILELABEL is only about 20 lines long. Most of the work is done by two subprograms, HEADER and UPSIDE. These can, and should, be copied out of this project and used in others. Use LINESAVER, in January of this year, to split out the subprograms. Or, type them in first, and separately, save them in MERGE format, and merge them into the main program listing, and wherever else you can use them.

If you write other programs that print on stickers, be careful of the line spacing between them. Labels that measure 15/16-inch in height have 1/16-inch blank space between them; so the distance from the start of one label to the start of the next is one inch. Because these printer subprograms can print letters in eight different heights, they must adjust the line spacing to match. Normal printing of text has dots spaced 1/72-inch apart vertically.

HEADER uses the printer command 27,65,H to set line height in line 31275. When H (height) of the printout is set to two, the spacing is set to 2/72-inch for each line feed. After the graphics have been printed, a larger line feed is set in line 31295 to make the spacing add up to one inch.

There are several different ways to design large letters for a printout. There is brute force, where hours can be spent creating long DATA statements full of meaningless numbers. There is also the screen dump technique, just copying a small part of the screen to a label. HEADER is a little different than these algorithms. It copies and translates the 16-digit hexadecimal code used by the TI screen display, and creates a printout in the same shape as that of the matching letters on screen.

The TI hex codes define an 8-pixel x 8-pixel pattern on screen, and the 16 characters are in order of those pixels from left to right, and top to bottom, just like we want to print them out. Because we need a flexible technique of printing letters larger than normal, we will print out each line of the TI code separately. The printer will make eight passes across the page for each title, one pass for each line. If the title is to be printed eight times normal height, than each pass will print eight dots high. If the title is to be just normal height, each pass will be just one dot high. That's a slow way to print anything; don't waste time using HEADER with the height and width factors both set to one. HEADER was not designed to emulate a single pin printer, unless, of course, you prefer the good old days. Remember the Gorilla Banana?

FILELABEL's main program is very simple, just a data entry screen for the labels to be printed. Rather than wait while each label is printed before going on to the next, FILELABEL will let you type in up to one hundred labels, and then go work on something else while it prints.

FILELABEL's main program is very simple, just a data entry screen for the labels to be printed. Rather than wait while each label is printed before going on to the next, FILELABEL will let you type in up to 100 labels, and then go work on something else while it prints. Before that, choose one third tab size file folders or one fifth size. That will change the maximum number of letters allowed on the label. The larger size tab can accommodate up to 24 letters, but the smaller only twelve.

In line 250, the main program advances some spaces between the labels. Be sure to change the OPEN statement to match your printer, here and on lines 31275 in HEADER and 32080 in UPSIDE. If you have the original TI printer, and have not reset the data bits option to ".DA=8", now you have an excuse to go do it right. Unless you reset that option on the DIP switch panel inside your printer, you will be limited to a maximum height in both HEADER and UPSIDE of seven times normal height. Resetting that switch will allow the larger numbers required as data to be accepted by the printer, so the subprograms will be able to print titles eight lines high.

The formulas in lines 240 and 250 calculate how wide to print that particular title. FILELABEL will print each title as wide as it can, and two times normal height. The rest of the work is done by HEADER and UPSIDE.

The two subprograms are nearly the same. Most of the loops have been reversed to print the same shapes upside down in UPSIDE. The order of some steps are reversed. HEADER prints the shapes for the first and second characters of the TI hexadecimal code for each letter in the title, advances a partial line, then repeats with the third and forth characters, and so on. UPSIDE prints the 16th and 15th, from the last character of the title to the first, and then advances the partial line and continues with the 14th and 13th characters, and continues.

Both subprograms depend on a shape table to print our their patterns. The table in UPSIDE is reversed left to right from the patterns in HEADER. These tables are recalculated for each title, because as the width setting changes, the patterns to print out get larger or smaller. The basic pattern matches the numbers zero to 15 in binary. That's 0000, 0001, 0010, 0011, 0100,... up to 1111.

HEADER works by matching up each letter in the hexadecimal character code against this table. If the letter is F, or binary 1111, HEADER prints four dots together. If it is two, or binary 0010, then spaces are left for two blank spots, one dot is printed, and another blank space is left. If height and width have been set to two, then the character two becomes four blank spots, two dots, and two more blank spots, and all repeated the same way on the next line for doubled height and width.

This technique is flexible. By altering the width option, each row may be expanded horizontally, up to the limit of the page size. Each row may be expanded vertically, up

(See Page 13)

EXTENDED BASIC—

(Continued from Page 12)

to eight times normal size. By using different values for H height and W width, the printout may be stretched to fit most rectangular shapes. By redefining the screen alphabet with Call CHAR statements and new shapes the printout may be altered in a matching way. Letters don't have to be recognizable. Mathematical symbols or hieroglyphics could by substituted for screen characters, and HEADER and UPSIDE will print them in the same shapes they appear on screen.

That's not a bad idea. I have a few articles on recent supercomputer efforts on calculating the value of Pi to the umpteenth million decimal place. That file will have a label printed with the Pi symbol. I'll make some with the round Pie symbol as well. That's with a wedge of pie missing... for the recipe file.

FILELABEL

```
100 ! FILELABEL !035
110 ! JLS 10/89 V. 2.1 !002
120 REM PRINTS LABELS FOR FI
LE FOLDERS (FILLS ADDRESS ST
ICKER), UPSIDE DOWN & REGULA
R !015
130 DIM N$(100)!197
140 ON WARNING NEXT :: L=0 !
092
150 CALL TITLE !236
160 DISPLAY AT(8,2):"USE NUL
L RESPONSE TO PRINT":"LABEL?
";N$(L)!139
170 DISPLAY AT(20,1):"ENTER:
1/3 TAB, OR 1/5 TAB":"5" !25
0
180 ACCEPT AT(21,1)VALIDATE(
"35")SIZE(-1)BEEP:WD :: IF W
D=3 THEN WD=24 ELSE WD=12 !1
00
190 ACCEPT AT(10,1)SIZE(WD)B
EEP:N$(L):: IF N$(L)="" THEN
 220 !165
200 L=L+1 !017
210 GOTO 190 !013
220 DISPLAY AT(12,3)ERASE AL
L:"PRINTING LABEL #     OF";L
 !139
230 FOR R=0 TO L-1 :: DISPLA
Y AT(12,20)SIZE(3):R+1 !241
240 CALL UPSIDE(N$(R),2,INT(
WD/LEN(N$(R))))!066
250 CALL HEADER(N$(R),2,INT(
WD/LEN(N$(R)))):: OPEN #4:"R
S232.DA=8.BA=4800" :: PRINT
#4: : :: CLOSE #4 :: NEXT R
!240
260 STOP !152
31225 SUB HEADER(X$,H,W)!006
31230 ! HEADER(INPUT$,HEIGHT
 OF HEADER IN DOTROWS,WIDTH
OF HEADER IN DOTROWS PER CHA
RACTER) !164
31235 ! PRINTS A BANNER HEAD
LINE UP TO 64 DOTROWS HIGH !
184
31240 ! EXITS WITHOUT ANY AC
TION IF STRING/WIDTH OF CHAR
S. COMBINATION IS TOO LONG !
164
31245 DIM A$(80),Z$(16)!093
31250 DATA 0000,0001,0010,00
11,0100,0101,0110,0111,1000,
1001,1010,1011,1100,1101,111
0,1111 !240
31255 D=2^H-1 !198
31260 RESTORE 31250 :: FOR L
=1 TO 16 :: READ T$ :: Z$(L)
=CHR$(27)&CHR$(75)&CHR$(W*4)
&CHR$(0):: FOR L2=1 TO 4 !13
2
31265 Z$(L)=Z$(L)&RPT$(CHR$(
VAL(SEG$(T$,L2,1))*D),W):: N
EXT L2 :: NEXT L !098
31270 IF LEN(X$)*W*8>480 THE
N H,W=999 :: SUBEXIT !166
31275 OPEN #1:"RS232.DA=8.BA
=4800.CR" :: PRINT #1:CHR$(1
3);CHR$(27);CHR$(65);CHR$(H)
!216
31280 FOR L=1 TO LEN(X$):: C
ALL CHARPAT(ASC(SEG$(X$,L,1)
),A$(L)):: NEXT L !072
31285 FOR L=3 TO 15 STEP 2 :
: FOR L2=1 TO LEN(X$):: FOR
L3=L TO L+1 :: T=ASC(SEG$(A$
(L2),L3,1))-47 :: IF T>10 TH
EN T=T-7 !135
31290 PRINT #1:Z$(T);!059
31295 NEXT L3 :: NEXT L2 ::
PRINT #1:CHR$(10);CHR$(13)::
 NEXT L :: PRINT #1:CHR$(27)
;CHR$(65);CHR$(30);CHR$(13):
: CLOSE #1 !058
31300 SUBEND !168
31530 SUB TITLE !240
31540 DISPLAY AT(1,9)ERASE A
LL:"FILELABEL" :: CALL CHAR(
95,"00FF"):: CALL HCHAR(2,11
,95,9)!223
31545 DISPLAY AT(3,6):"LABEL
S STICKERS" !115
31560 SUBEND !168
32000 SUB UPSIDE(X$,H,W)!039
32010 ! UPSIDE(INPUT$,HEIGHT
 OF HEADER IN DOTROWS,WIDTH
OF HEADER IN DOTROWS PER CHA
RACTER) !197
32020 ! PRINTS AN UPSIDEDOWN
  HEADLINE UP TO 64 DOTROWS
HIGH !114
32030 DIM A$(80),Z$(16)!093
32040 DATA 0000,0001,0010,00
11,0100,0101,0110,0111,1000,
1001,1010,1011,1100,1101,111
0,1111 !240
32050 D=2^H-1 !198
32060 RESTORE 32040 :: FOR L
=1 TO 16 :: READ T$ :: Z$(L)
=CHR$(27)&CHR$(75)&CHR$(W*4)
&CHR$(0):: FOR L2=4 TO 1 STE
P -1 !011
32070 Z$(L)=Z$(L)&RPT$(CHR$(
VAL(SEG$(T$,L2,1))*D),W):: N
EXT L2 :: NEXT L !098
32075 IF LEN(X$)*W*8>480 THE
N H,W=999 :: SUBEXIT !166
32080 OPEN #1:"RS232.DA=8.BA
=4800.CR" :: PRINT #1:CHR$(1
3);CHR$(27);CHR$(65);CHR$(H)
!216
32090 FOR L=LEN(X$)TO 1 STEP
 -1 :: CALL CHARPAT(ASC(SEG$
(X$,L,1)),A$(L)):: NEXT L !1
82
32100 FOR L=15 TO 3 STEP -2
:: FOR L2=LEN(X$)TO 1 STEP -
1 :: FOR L3=L+1 TO L STEP -1
 :: T=ASC(SEG$(A$(L2),L3,1))
-47 :: IF T>10 THEN T=T-7 !0
37
32110 PRINT #1:Z$(T);!059
32120 NEXT L3 :: NEXT L2 ::
PRINT #1:CHR$(10);CHR$(13)::
 NEXT L :: PRINT #1:RPT$(CHR
$(10),7);CHR$(27);CHR$(65);C
HR$(30);CHR$(13):: CLOSE #1
!093
32130 SUBEND !168
```

TRIALS OF A c99 BEGINNER

Polynomial approximation least-squares polynomial

By CHARLES E. KIRKWOOD JR.

Approximation polynomials are generally used in the solution of Trigonometric Mathematical Functions and others rather than the evaluation of a series.

While not always as accurate as a series, polynomial evaluation is usually much quicker. However, the accuracy may be sufficient. One such approximation polynomial is the least-square polynomial. Others may be more accurate, but this one is fairly easy to program and it may be accurate enough.

Al Beard, writer and distributer of a FORTRAN compiler for the TI99/4A and Geneve, and Elmer Clausen, writer of the FORTRAN Mathematical Library, sent me a source copy of their mathematical subroutines and gave me permission to translate them to c99 for these articles. I was very happy to receive them and looked forward to doing this. But, I ran into some difficulty. These routines were written in double precision FORTRAN with 14 or 15 digits. Using the c99 Floating-point Library I have been able to convert only 8 characters (including sign and decimal) to a floating-point number. Even though an answer may be printed out to 12 characters, the string for conversion can only have 8.

That meant that the c99 functions would not have enough accuracy over the range of those given in the FORTRAN library. So, I put this project aside. If I could use smaller intervals I might be able to come up with some good approximations, but I would have to use some additional approximation polynomials.

Then I remembered a method to calculate polynomial coefficients that I had used several years ago —the least-squares polynomial.

The least-squares polynomial program requires several of the Mathematical Functions that have been given in previous articles. Remember, I have revised and separated them into different files so that you only compile those that you actually need. A group of x and y values are input and the coefficients of an approximate polynomial fit are calculated and printed on the screen. The fit will vary with the polynomial degree and the interval size. These coefficients are for a polynomial of increasing powers, so they are reversed in the program for use with the function fpoly().

There is a formula to provide a measure of the closeness of the approximation to the original curve. Instead of using this formula, a table is printed with the original x and y values as well as the new calculated y values using fpoly(). You can see for yourself how good the fit is.

The program allows you to choose polynomial degrees from 1 through 7. While the original x and y values are stored, the polynomial degree can be changed so that the user can decide which fit he wishes to use.

In a test example with 11 x and y points and a small interval, the results were accurate to 5 or more digits. To give you a comparison between the approximation polynomial and series, a 6th degree polynomial required 6 arithmetic steps while the series required between 35 and 140 arithmetic steps over the interval taken.

I will be happy to hear from any of you who might like to share their c99 functions and/or programs with others. My address is Box 1241, Clemson, SC 29633.

```
#include DSK1.FLOAT1
extern printf(),atoi();
main()
{
 float x[25][8],y[25][8],r[8],b[200][8],v[8][8];
 float xy[8],z[8][8],p[16][8],t[8],xx[8],yy[8];
 char s[15];
 int m,n,d,i,j,k,n1,n2,u,w;
 puts("\nNumber of points ");
 m=atoi(gets(s));
 puts("\nInput x and y values\n");
 for(i=0;i<m;++i)
 {
  printf("x(%d) ",i);
  fpget(s,&x[i][0]);
  printf("y(%d) ",i);
  fpget(s,&y[i][0]);
 }
 puts("Degree of polynomial ");
 d=atoi(gets(s));
 while(d!=9)
 {
  n=d+1;
  n2=2*n-1;
  for(i=0;i<n2;++i)
  {
   itof(0,&p[i][0]);
   for(k=0;k<m;++k)
   {
    fcpy(&x[k][0],t);
    an(t,i,r);
    fexp(&p[i][0],"+",r,&p[i][0]);
   }
  }
  for(i=0;i<n;++i)
  {
   itof(0,&v[i][0]);
   for(k=0;k<m;++k)
   {
    fcpy(&x[k][0],t);
    an(t,i,r);
```

(See Page 15)

c99—

(Continued from Page 14)

```
        fexp(r,"*",&y[k][0],xy);
        fexp(&v[i][0],"+",xy,&v[i][0]);
      }
    }
    putchar(10);
    n1=n+1;
    for(i=0;i<n;++i)
    {
      for(j=0;j<n;++j)
        fcpy(&p[i+j][0],&b[td(n1,i,j)][0]);
      fcpy(&v[i][0],&b[td(n1,i,n)][0]);
    }
    simeq(n,b,z);
    putchar(10);
    for(i=0;i<=d/2;++i)
    {
      fcpy(&z[i][0],r);
      fcpy(&z[d-i][0],&z[i][0]);
      fcpy(r,&z[d-i][0]);
    }
    printf("\nDegree = %d\n",d);
    puts("\nCoefficients:\n");
    for(i=0;i<=d;++i)
    {
      fpput(&z[i][0],s);
      putchar(' ');
    }
    puts("\n\nX and Y values:\n");
    for(k=0;k<m;++k)
    {
      if(k==12)
      {
        puts("Press <ENTER> to continue ");
        gets(s);
      }
      fcpy(&x[k][0],xy);
      fpoly(d,z,xx,yy);
      fpput(xx,s);
      putchar(' ');
      fpput(&y[k][0],s);
      putchar(' ');
      fpput(yy,s);
      putchar(10);
    }
    putchar(10);
    puts("Type 9 to stop\n");
    puts("Degree of polynomial ");
    d=atoi(gets(s));
  }
}
#include DSK1.SIMEQ
#include DSK1.AN
#include DSK1.FPOLY
```

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Catwriter

A program that lets you use longer filenames

By JIM PETERSON
Tigercub Software

Personally, I hate those abbreviated disk filenames! I find it too hard to condense a program name, especially with a version number, into an intelligible 10-character abbreviation — and even more difficult later on to recognize my own abbreviation.

So, I wrote this "program that writes a program." It reads the disk directory, asks you for a screen title name with the diskname displayed as default, then displays the disk filename of each program or D/V 254 file, in sequence, and asks you for the complete program title. It skips over other types of files, but cannot distinguish an option 5 assembly file — you can skip these by simply pressing Enter. It writes all this data onto a DSK1 file called LOAD, so be sure you have first renamed any essential file named LOAD on the disk. The disk must have room for the Quickloader, from 8 sectors for a few programs to an absolute maximum of about 80 for 127 25-character names.

Then, you simply merge in the LOAD file, save it back to the disk, and run it. You will be presented with a menu of programs by their complete name, and can select and run any one of them by simply entering its number.

The program is intended for use on disks which you have filled and do not expect to change. If you do make changes, it is easy to run through Catwriter again, or you can edit the data filenames beginning in line 1000 and program names beginning in line 1100 providing you do not upset their relative sequence.

This is a program that writes a program which rewrites itself, so it must be assembled. First key in this part — don't change line numbers.

```
1Ø CALL CLEAR :: W=16 :: @=1
 :: CALL COLOR(Ø,W,@,@,W,@,2
,W,@,3,W,@,4,W,@,5,W,@,6,W,@
,7,W,@,8,W,@,9,W,@,1Ø,W,@,11
,W,@,12,W,@)
11 DATA 1
12 READ A :: GOTO 14
13 X,R,J,X$,N,A$,B,C :: CALL
 CHARSET :: CALL LOAD :: CAL
L LINK
14 ON WARNING NEXT :: DIM M$
(127):: CALL SCREEN(5):: CAL
L PEEK(8198,A):: IF A<>17Ø T
HEN CALL INIT
15 !@P-
16 REM
17 X=X+1 :: READ M$(X):: IF
M$(X)<>"END" THEN 17
18 R=3 :: FOR J=1 TO X-1 ::
READ X$ :: DISPLAY AT(R,1):S
TR$(J);TAB(4);X$ :: R=R+1 ::
 IF R<23 THEN 21
19 DISPLAY AT(24,1):"Choice?
 or Ø to continue Ø" :: ACCE
PT AT(24,26)VALIDATE(DIGIT)S
IZE(-3):N :: IF N>X-1 THEN 1
9
2Ø IF N<>Ø THEN 23 :: R=3
21 NEXT J
22 DISPLAY AT(24,1):"Choice?
" :: ACCEPT AT(24,9)VALIDATE
(DIGIT):N :: IF N=Ø OR N>X-1
 THEN 22
23 CALL CHARSET :: CALL CLEA
R :: CALL SCREEN(8):: CALL P
EEK(-31952,A,B):: CALL PEEK(
A*256+B-65534,A,B):: C=A*256
+B-65534 :: A$="DSK1."&M$(N)
:: CALL LOAD(C,LEN(A$))
24 FOR J=1 TO LEN(A$):: CALL
 LOAD(C+J,ASC(SEG$(A$,J,1)))
:: NEXT J :: CALL LOAD(C+J,Ø
):: GOTO 1ØØØØ
1ØØØØ RUN "DSK1.123456789Ø"
```

Save that by SAVE DSK1.CAT/S,MERGE. Then key this in:

```
1ØØ OPEN #1:"DSK1.CAT/S",VAR
IABLE 163,INPUT
11Ø OPEN #2:"DSK1.CAT/O",VAR
IABLE 163,OUTPUT
12Ø FOR J=1Ø TO 25 :: LINPUT
 #1:M$ :: PRINT #2:CHR$(Ø)&C
HR$(J)&CHR$(156)&CHR$(253)&C
HR$(2ØØ)&CHR$(1)&"2"&CHR$(18
1)&CHR$(199)&CHR$(LEN(M$))&M
$&CHR$(Ø):: NEXT J
13Ø PRINT #2:CHR$(255)&CHR$(
255):: CLOSE #1 :: CLOSE #2
```

Run that to convert the file CAT/S into a file called CAT/O. Then key this in. Again, don't change line numbers.

```
1ØØ CALL CLEAR :: CALL TITLE
(16,"CATWRITER"):: CALL CHAR
(127,"3C4299A1A199423C"):: D
ISPLAY AT(2,1Ø):"Version 1.5
":;:TAB(8); Tigercub Softw
are"
11Ø DISPLAY AT(15,1):"For fr
ee":"distribution":"but no p
rice or":"copying fee":"to b
e charged." :: FOR D=1 TO 5Ø
Ø :: NEXT D :: CALL DELSPRIT
E(ALL)
12Ø DISPLAY AT(2,3)ERASE ALL
:"TIGERCUB CATWRITER V.1.5":
;:" Will read a disk directo
ry,":"request an actual prog
ram":"name for each program-
type"
13Ø DISPLAY AT(7,1):"filenam
e, and create a merg-":"able
 Quickloader which dis-":"pl
ays full program names and":
"runs a selected program."
14Ø DISPLAY AT(12,1):" Place
 disk to be cataloged":"in d
rive 1 (BE SURE it does":"no
t have an essential LOAD":"p
rogram!) and press any key."
15Ø CALL KEY(Ø,K,S):: IF S=Ø
 THEN 15Ø
16Ø OPEN #2:"DSK1.LOAD",VARI
ABLE 163,OUTPUT
17Ø REM
18Ø REM
19Ø OPEN #1:"DSK1.",INPUT ,R
ELATIVE,INTERNAL :: INPUT #1
:N$,A,J,K :: LN=1ØØØ :: FN=1
1ØØ
2ØØ DISPLAY AT(18,1):"Disk n
ame?":;:N$ :: ACCEPT AT(2Ø,1
)SIZE(-28):N$ :: LX$=STR$(14
-LEN(N$)/2):: LXLEN=LEN(LX$)
21Ø PR$=CHR$(Ø)&CHR$(16)&CHR
$(162)&CHR$(24Ø)&CHR$(183)&C
HR$(2ØØ)&CHR$(1)&"1"&CHR$(17
9)&CHR$(2ØØ)&CHR$(LXLEN)&LX$
22Ø PR$=PR$&CHR$(182)&CHR$(1
81)&CHR$(199)&CHR$(LEN(N$))&
```

(See Page 18)

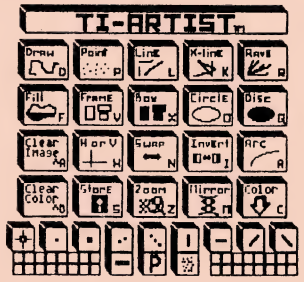
The makers of TI Artist are proud to introduce the most powerful and comprehensive graphics development system available for the TI-99/4a Home Computer...

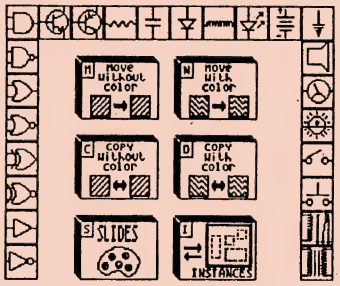
TI Artist Plus!

More than just an ordinary drawing package, TI Artist PLUS! is a complete drawing system that consists of six dynamic graphics development modules. With these modules, virtually anyone can create, edit, transform, and present the most dazzling of graphics. And with its innovative point-and-shoot menu system, TI Artist PLUS! is extremely user friendly.

Drawing Module

With 8 different brushes, 10 fill patterns, and 16 available colors, almost any picture can be created using TI Artist's drawing tools. Freehand drawing, automatic point-to-point lines, shooting rays, boxing, circling, filling, mirroring, zooming, and spray painting are all a snap! Variable arcs and ellipses can also be drawn with ease. Any picture you design may be saved to disk and later recalled for viewing and modification.





Enhancement Module

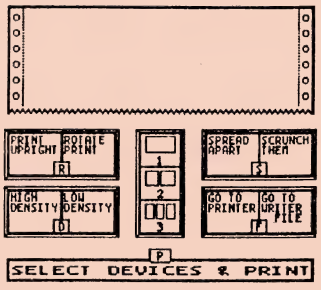
Cutting, pasting, copying, importing and exporting graphics is easy with TI Artist PLUS!. Small images, called instances, and collections of small images, called slides, may be used to enhance your artwork. Instances and slides can be created, saved to disk, and used over and over again in all of your drawings. And if you wish, you could also purchase small collections of various (pre-drawn) graphics artwork to use.

Only $24.95

(Plus Shipping)

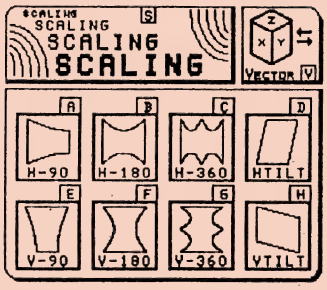
Print Module

With TI Artist PLUS! 1 to 3 pictures can be simultaneously printed together (or separated) across a standard 8.5" x 11" sheet of paper. Print options include: printing in portrait or landscape mode, printing in high or low density, redirecting output to a disk file, printing an outline around a picture, and printing a reverse image of a picture. TI Artist PLUS! supports most popular printers and a limited number of color printers.



Vector Module

Selected areas of a picture can be scaled using TI Artist PLUS!. With scaling, a section of your picture can made larger or smaller; the height and width of an object can be varied independently. Special effects can also be used to enhance selected areas of a picture. They allow the horizontal and vertical parts of an image to be scaled along a range. Objects can be tilted and shifted using various predefined special effects.



Font Module

The font module is used to place alphanumeric data anywhere within a picture. Detailed bit-mapped fonts (available in numerous Artist Companion products) may be used to label a drawing, create a sign, and so on. Features available in the font module include: multiline text editing, automatic outlining of fonts, automatic shadowing of fonts, and automatic left, right and center text positioning.

Movie Module

Animated movie sequences can be produced with TI Artist PLUS!. A small interpreted command language allows you to design an animated sequence using your own pictures and artwork. The command language consists of 8 simple instructions, including a handy indexing command that will display a directory of all your TI Artist files. Movies may be saved to and later played from disk.

Upgrade to TI Artist PLUS!

Owners of the original TI Artist may obtain TI Artist PLUS! for only $14.95 (plus shipping). To be eligable for the reduced rate, return your original TI Artist disk and the front page of your existing TI Artist manual along with the upgrade fee.

TI Artist PLUS! requires a disk system, 32K, and either an XB, E/A, or MM cartridge. TI Artist PLUS! is compatible with the Geneve 9640 (in GPL mode), and the Myarc hard disk controller. TI Artist PLUS! supports the following printers: Epson, Prowriter, IBM Graphics Printer, Seikosha GP-100/100TI/550/700, Okidata 92/93, Star NX-1000 Rainbow, and Canon PJ1080A, and Tandy CGP220..

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CATWRITER—

(Continued from Page 16)

```
N$&CHR$(Ø)
23Ø PRINT #2:PR$
24Ø DISPLAY AT(23,1):"To omi
t a file, press Enter"
25Ø X=X+1 :: INPUT #1:P$,A,J
,B :: IF LEN(P$)=Ø THEN 29Ø
:: IF ABS(A)=5 OR ABS(A)=4 A
ND B=254 THEN 26Ø ELSE X=X-1
 :: GOTO 25Ø
26Ø DISPLAY AT(18,1):P$;"
 PROGRAM NAME?" :: ACCEPT AT
(2Ø,1)SIZE(25):F$ :: IF F$="
" THEN X=X-1 :: GOTO 25Ø
27Ø PRINT #2:CHR$(INT(FN/256
))&CHR$(FN-256*INT(FN/256))&
CHR$(147)&CHR$(2ØØ)&CHR$(LEN
(F$))&F$&CHR$(Ø):: FN=FN+1
28Ø M$=M$&CHR$(2ØØ)&CHR$(LEN
(P$))&P$&CHR$(179):: IF X<11
 THEN 25Ø
29Ø IF M$="" THEN 31Ø
3ØØ PRINT #2:CHR$(INT(LN/256
))&CHR$(LN-256*INT(LN/256))&
CHR$(147)&SEG$(M$,1,LEN(M$)-
1)&CHR$(Ø):: LN=LN+1 :: M$="
" :: X=Ø :: IF LEN(P$)<>Ø TH
EN 25Ø
31Ø PRINT #2:CHR$(INT(LN/256
))&CHR$(LN-256*INT(LN/256))&
CHR$(147)&CHR$(2ØØ)&CHR$(3)&
"END"&CHR$(Ø)
32Ø PRINT #2:CHR$(255)&CHR$(
255):: CLOSE #1 :: CLOSE #2
33Ø DISPLAY AT(8,1)ERASE ALL
:"Enter -":;:"  NEW":;:"  ME
RGE DSK1.LOAD":;:"  SAVE DSK
1.LOAD"
34Ø SUB TITLE(S,T$)
35Ø CALL SCREEN(S):: L=LEN(T
$):: CALL MAGNIFY(2)
36Ø FOR J=1 TO L :: CALL SPR
ITE(#J,ASC(SEG$(T$,J,1)),J+1
-(J+1=S)+(J+1=S+13)+(J>14)*1
3,J*(17Ø/L),1Ø+J*(2ØØ/L))::
NEXT J
37Ø SUBEND
```

Enter MERGE DSK1.CAT/O to merge that file into lines 170-180 and you are done.

If you don't have time to key it all in, send $3 for a diskfull of this and other utilities, to Jim Peterson, 156 Collingwood Ave., Whitehall OH 43213.

Expanding your system

Which comes first?
A memory expansion, a disk system, a PEB...

By JOHN KOLOEN

What's the best way to expand my system?

That's a question I get frequently from readers of MICROpendium. Often, the user has a console, a variety of cartridges, a cassette recorder and a small TV or inexpensive monitor.

What he wants to know is: Where do I go from here?

The answer isn't simple, by any means. The variables are many, not the least of which is how much can one afford to spend on expanding a basic system. Anyone who has built a system is familiar with the tradeoffs:

Here are some typical questions:

- Is it better to get a memory expansion or disk controller and floppy disk drive?
- If I get a disk system, should I go with CorComp or Myarc?
- What about a RAMdisk?
- Or is a printer my best bet?
- Do I need a Peripheral Expansion Box? Or should I get one of those CorComp 9900 Micro-Expansion Systems?
- And what about those GRAM devices? Can I really use them to put my cartridges on disks?
- How about a hard drive? If I get a disk system, am I better off getting a Myarc Hard and Floppy Disk Controller instead of getting a separate floppy controller?
- What about the PC-type keyboards from Rave 99?
- And the big question, what about getting a Geneve?

By the time you decide what you're going to do to expand your system you may find that raising the money to do it is the easy part. There are just so many options and configurations that you could spend several thousand dollars and still not have a "complete" system.

As a starting point, I'll define several system configurations:

BASIC SYSTEM — Consists of a console and some sort of inexpensive monitor (plugging the TI into the living room TV just doesn't cut it). A 10-inch black and white TV that you can buy used for $20 is preferable to a 27-inch color TV for any programming use. When playing games, though, it's hard to beat the big screen.

In any case, a Basic System should sit on a table or desk and not the living room carpet, which can create all kinds of problems from static electricity.

The Basic System uses a cassette recorder to store programs and data and basically has no room for expansion without adding an expansion box of some sort. With a Basic System you are able to use only the shorter Extended BASIC programs (if you have the Extended BASIC cartridge), some assembly language programs using a Mini-Memory Module (if you have it) and, of course, programs designed to run out of console BASIC.

A Basic System will never let you use the thousands of assembly language programs written for the TI — far more programs than are available on cartridge. You will also not be able to use the more sophisticated Extended BASIC programs which require disk systems for data storage or use more than the 13.9K of memory available for Extended BASIC with the console alone, or access

(See Page 19)

EXPANDING YOUR SYSTEM—

(Continued from Page 18)

assembly language routines.

If you already haven't guessed, a Basic System is a dead-end as far as personal growth in computing is concerned.

BASIC EXPANDED SYSTEM — Consists of the above along with an expansion box (this can be the TI Peripheral Expansion Box or a Micro-Expansion System.) In either case, the system usually includes a 48-kilobyte expansion memory, a floppy disk controller, a 5.25-inch disk drive and an RS232/Parallel printer port.

Right here we bump into a problem: The disk controller. The type of controller you have will determine whether you can store 90K of data on a single disk or 360K on a single disk. The TI controller doesn't support double-density disk formats, so the most data you could pack on a disk with this controller is 180K in a double-sided, single-density format.

The CorComp and Myarc controllers all support a range of formats from single-sided, single-density to double-sided, double-density. Myarc also offers an upgrade on its Hard and Floppy Disk Controller that will support quad-density floppy formats (up to 720K of data storage using 3.5-inch disks).

You can see already that we haven't advanced beyond the Basic Expanded System and already we've got too many decisions to make. My recommendation on disk controllers is to install a controller that supports DSDD formats, which basically means a choice between a CorComp or a Myarc controller. (If you can get a TI disk controller for $20 or so, by all means buy it. You can buy a lot of floppy disks for the money you'd save between it and a DSDD controller.) In addition to its HFDC, Myarc also produces a floppy disk controller.

Prices on controllers vary widely, depending on whether you are buying new or used. (If you buy used, make sure that you get *all* of the documentation. Used equipment may be priced right, but without manuals you may never get it to work properly.) The HFDC is more expensive than other controllers but it controls hard disks as well as floppy drives. If you have any intention of getting a hard disk, you'll save money in the long run by buying the HFDC over a floppies-only disk controller.

As far as the actual disk drive goes, I don't recommend full-height drives because they haven't been manufactured for several years. Used floppy disk drives frequently aren't good deals because the price of new half-height drives is relatively low, often under $100. Typically, if you have to have a technician realign a used drive, which is a common procedure, you'll spend $50 right there.

Most drives that work in PCs will also work in a TI, so you know before you start looking that they will be easy to find. Major manufacturers are Mitsubishi, Fujitsu, Sony, Teac and Toshiba. Virtually all half-height drives will support double-sided, double-density formats. In fact, it is safe to say that only older full-height drives — such as those by Tandon and Shugart — don't support DSDD formats. (Incidentally, it is a similar situation with diskettes. Unless you look very hard, you won't be able to find any single-sided, single-density diskettes.

In addition to the disk drives, you'll also need a power supply. If you buy a PEB, the power supply is internal and all you need to do is plug the drive in. Without a PEB, or to connect additional drives, you'll need an external power supply. These often come with disk drive enclosures, though it is possible to purchase power supplies separately. But more on that in a future installment. The Basic Expanded System starts out with only one drive.

DO YOU REALLY NEED AN RS232 CARD?

So, you're going to have a DSDD controller, what about the RS232 card? How badly do you need it?

If you intend to connect a printer to your system, you will need an RS232 card. RS232 cards include a parallel port, which is the most common connection used for printers. The RS232 port itself, also known as a serial port, is most commonly used to connect a modem. RS232 cards were produced by a number of manufacturers, including TI, Myarc and CorComp.

Unlike disk controllers, about which one can write a book-length article, the RS232 cards are short stories at best. Their purpose is simply to allow you to interface devices to your computer. They act as the input/output link to the devices, such as printers and modems. And that is about it. Oh, you actually get two RS232 ports with the cards but, unless you have a printer, that doesn't work with a parallel port you most likely will never have use for a second RS232 port.

If you don't plan to use a printer or a modem, then you will do just fine without an RS232 card.

(See Page 24)

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#1. THE SINGING TI-99/4A SPEECH & MUSIC DISK
This is the disk everyone is talking about. The computer voice actually sings to animated graphics. Includes routines by master programmer Ken Gilliland. Bert & Earnie, Maltilda & much much more. 2 disk sides, speech & 32 K req. Exbasic autoload.

#2. WHEEL OF FORTUNE, BLACKJACK & JOKER POKER
Three fantastic freeware programs on one disk. Professional quality and the best "wheel" game around at any price. Vanna would love it !

#3. DUMPIT
This disk helps you transfer many TI modules to disk. Recommended for users with some programming ability. Ed/Assembler and "widget" recommended.

#4. PRINTART
Two disk sides filled with files that print out great quality pictures on most printers. Many famous TV and comic characters on this disk. "Beam me up Scotty."

#5 ORIGINAL TI SALES DEMO DISK WITH TI-TREK GAME
This disk is packed full of assorted files of all types. Graphics, speech etc. Contains complete TI-TREK game for Speech Editor or TE-II module.

#5A. TI MUSIC/GRAPHICS
A great collection of music and matching graphics. Great examples of music & sprite programming.

#6. EXBASIC MUSIC
A two disk side collection of music & graphics that we consider some of the best.

#7. SPACE SHUTTLE MUSIC/GRAPHICS
One of the real outstanding examples of programming. This disk has it all. Great graphics, music, and continuity. A real salute to the space program. It is almost like watching a movie!

#8. LOTTO PICKER
This program randomly generates numbers for use in the various state lotto games and even runs a simulated lotto game. Easy to modify for pick 6 etc. games. A great learning and fun disk.

#9. MONA LISA PRINT OUT
This disk prints out a near photo quality picture of that lady with the clsssic smile. We understand it was made by digitizing the original with a super powerful computer and converting the output to run on the TI-99/4A. Impresses everyone who sees it! Requires Epson printer compatibility.

#10. GOTHIC PRINT
This disk lets you type out a phrase on the screen and then print it out in gothic (Old English) style. Looks like hand-lettered calligraphy. Use for invitations, announcements and business cards.

#11. ANIMATED CHRISTMAS CARD "WOODSTOCK"
This disk was actually originally sent to TEX-COMP as a greeting from master programmer Ray Kazmer. It was just too good not to share! One of the best examples of computer animation and graphics you will see on any computer!

#12. TI-99 OLOPY
This great piece of programming actually simulates and plays the famous board game. For legal reasons we cannot name the game but "do not pass Go! but go directly to Jail!"

#13. STRIP POKER (PG RATED)
Play Poker against your TI-99/4A. When you win a hand she loses--a piece of her clothes that is. Don't worry about being a lousy poker player. Another file is included where you don't even have to know an ace from a king.

#14. FIGURE STUDY (PG RATED)
A collection of Playboy type centerfolds that can be printed out at your command. Use with any printer.

#15. STAR/EPSON PRINTER DEMO
This 2 sided disk contains a large collection of demo programs to put your Star/Epson compatible printer through its paces. Learn what control codes can do! Lots of text and graphics examples. Second side has a great tutorial on printer graphics with examples!

#16. SIDEWAYS PRINTOUT
This program allows you to print out the material from your printer sideways. Great for spreadsheets, banners and large graphics. Second side contains some new enhancements for Multiplan not available on the TI upgrade.

#17. TI FORTH DEMO
This demo disk was released by TI to show the power of Forth. Fantastic music and graphics. Ed/Assem and 32K required!

#18. TI DIAGNOSTIC
This program loads into the Mini-Memory module and checks out your entire system. Much better than disk based diagnostics that cannot be used if a problem in the disk system is at fault. Complete documentation on second side.

#19. TI WRITER/MULTIPLAN UPGRADE
This disk released by TI adds real lower case to your TI Writer, speed to Multiplan and other enhancements. Easy to use., just substitute new files for old! Instructions included.

#20. ACCOUNTS RECEIVABLE
This self contained prize winning program loads and runs in Exbasic and has all the features found in a progessional accounting system. Complete with documentation and a second disk side with report generating programs.

#21. DATA BASE DEMO DISK
A progessional data base program that was originally written to store various magazine articles from computer magazines and then find them by name, subject, key word, or publication. Fast, easy to use and easy to adapt for other applications. Come complete with sample data to make learning data base processing easy. Completely menu driven and unprotected.

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#22. ASTROLOGY
This one is as good as anything you will see in an arcade. Great color graphics and displays of the Zodiac. Enter your birthdate and learn about your sign, your lucky days and famous events in history on your birthday. Even prints out a report. Can be used as a great moneymaker at a charity event. Help guide your spouse's career.

#23. WILL WRITER
Enter your answers to a group of computer asked questions and this program then writes you a last will and testament. Now you can leave your TI-99/4A to your favorite nephew. Works with any printer. Appears legal in all states but better check that out!

#24. ENGINEERING CALCULATIONS
A two sided computer handbook of dozens of the most often used engineering and technical formulas. A real time saver. Does conversions, calculations and even designs electrical circuits. A must for anyone whose profession or hobby involves scientific calculations. Even has medical and communications applications.

#25. MEDICAL ALERT
This disk contains many menu accessible files covering most everyday medical emergencies. A good "what to do until the doctor or paramedic comes" guide. Well written and organized. Could very easily save a life!

#26. R RATED GAME
It was bound to happen. A talented (but demented) programmmer in Germany wrote an Invaders type game but with most unusual guns and targets. Definitely not what you would find at your neighborhood arcade. Not only a great party game but some great programming. You must be over 18 to order this one!!

#27. KIDS LEARNING
An educator in Georgia put this two sided disk collection of educational programs together. Contains great material. Math, geography, reading improvement, and even IQ testing. All high quality programs for kids of all ages.

#28. LOADERS AND CATALOGERS
We put together a collection of the best programs that catalog and load a group of programs on a disk. Just try them, pick the one you like and transfer it to another disk with the file name LOAD and you are in business.

#29. LABEL MAKER I
Two great programs for making custom labels for disks, addresses video tapes or any other application. Even contains a graphic display of the TI-99/4A console. Now you can create custom labels of any number by just typing in the lines as you want them. Uses standard tractor labels.

#30. HOUSEHOLD BUDGET PRINTOUT
With this disk you print out the data you have stored with the TI HBM Module. HBM is a great module that can be used for many home and small business applications but TI forgot to include a printout function. This program comes with full instructions and we are sure that your HBM Module will now start being used. Fantastic programming job.

#31. MORSE CODE TRAINER DISK
This disk has everything you need to learn and practice Morse Code for the various FCC license exams. It also is great for scout groups and school "ham" clubs for group training and merit badge qualification. Professional quality.

#32. EXBASIC XMAS MUSIC
Two disk sides full of high quality xmas music that can be played throughout the holiday season and then used as a learning tool since it contains wonderful arrangements and graphics. Autoloading and menu driven.

#33. CHECKERS & BACKGAMMON
A collection of great checkers and backgammon games for the TI-99/4A. These are professional in quality and will keep you busy for hours.

#34. SOLITAIRE & SCRABBLE
Another collection of classic games for the TI-99/4A. Exbasic & 32K req.

#35. PROGRAMMING AIDS & UTILITIES I
A collection of some unusual programs of interest to programmers. One program shows a group of opening title displays, another is a cross reference program as good as any of the commercial ones, plus a great disk management utility.

#36. STRICTLY BUSINESS
A collection of various programs for evaluating loans, calculating interest, and other financial items such as return on investment and security performance. Two disk sides filled with financial and business related programs.

#37. LAPD COOKBOOK
This unofficial police cookbook was put together by one of our boys in blue who is also a gourmet chef. (Yes, it contains jailhouse chili) Over 50 great receipes from soup to nuts on two disk sides and each separate side can be called up on screen or printer in exbasic from a menu. As good as any of the new PC computer cookbooks we have seen.

#38. GREAT 99/4A GAMES VOL. I
A collection of professional games in assembly and exbasic that all load from a menu in exbasic. Includes a great ski game where you dodge the trees in a fast downhill run. We have included only the best.

#39. GREAT 99/4A GAMES VOL. II
Still more of the great ones from all over the world. The quality, graphics and speed of many of these games will make you wonder why they were never released commercially.

#40. ARTIFICIAL INTELLIGENCE
This disk contains the famouse computer program "Eliza" where you type in a question or a problem you are having and "Eliza" helps you find the solution. Also contains one of the better bio-rhythm programs so you can analyze all your emotional problems at one sitting.

#41. VIDEO GRAPHS MODULE BACKUP DISK
This disk is a backup of the discontinued Video Graphs Module from TI. For legal reasons, it can only be purchased for backup use by owners of the original module. Do not order UNLESS you have the original module and intend to use this disk only for backup purposes. Exbasic autoload...

#42. FUNNELWEB FARM UTILITY
You heard about this one, now direct from Australia is the latest version of this fantastic utility that puts everything at your command. From one program you can access word processing, editor assembler, telecommunications and just about everything else. A freeware program complete with documentation on a second disk side.

#43. BEST OF BRITAIN, VOL I
Now for the first time, a collection of the best 99/4A games Britain has to offer including the famous "Billy Ball" series of arcade games. Great graphics, action and excitement.

#44. LABEL MAKER I GRAPHICS
A disk filled with graphics for the Label Maker I disk (#29). Dozens of great graphics for custom labels!

#45. BEST OF BRITAIN, VOL II
This disk contains an outstanding 3-D graphics adventure game for the TI-99/4A. Carfax Abbey lets you actually move through a four story mansion complete with bats and vampires. You actually are placed in each room and go up and down stairs and through secret panels. Legend of Zelda...look out!

#46. SUPER TRIVIA 99
A great trivia game for 1 to 4 players with great questions and capability to add your own and print out the files. This one is a real challenge.

#47. INFOCOM RAPID LOADER
If you have Infocom games this is for you. Loads all TI Infocom games in only 28 seconds and permits new screen colors and improved text display. Comes with all documentation on disk.

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#48. GHOSTMAN (from England)
This Pacman Munchman type game starts at a slow pace and slowly speeds up to a break-neck pace. A totally new experience.

#49. DEMON DESTROYER (from France)
This great assembly game starts where Invaders leaves off. Add features like descending aliens and closing walls. Hours of great arcade action.

#50. OH MUMMY (from Germany)
Move through the chambers of a Pyramid in search of hidden treasure. Fantastic graphics and great entertainment.

#51. BERLIN WALL (from Canada)
This game requires a mine field to be crossed before escaping from E. Berlin. Good graphics and a real challenge.

#52. ANIMATION 99 (from Germany)
THIS IS THE ONE!!! A demo disk filled with computer animation routines like you have never seen before on any computer. See famous cartoon figures move with more realism that on Sat. morning TV. This disk received a standing ovation when previewed at a local users group. We have even included instructions how to do it yourself on the second disk side. This one is a show stopper!!!

#53. HACKER/CRACKER
A collection of disk copying programs that copy TI disks by tracks. If one of these can't copy a protected disk nothing will. We included a collection of the very best ones including both TI and CorComp compatible. These programs require 2 disk drives and 32K of memory.

#54. ASTRONOMY
This program from Australia plots the heavens and teaches you about the solar system. A great learning and reference tool. Exbasic and 32K required. Don't confuse this one with our Astrology demo. They are not the same...ask Nancy!

#55. SCREEN DUMP
This program allows you to dump disk and even module programs to a Star Epson compatible printer. Comes with easy to follow plans to build a load interrupt switch which is needed to dump module programs. This dump program by Danny Michael is considered the best of the bunch! Complete with documentation.

#56. SPREAD SHEET
OK, it's not Multiplan but it works great and handles many spread sheet applications. A great way to learn to use spread sheet software. Comes with full instructions and documentation.

#57. TELCO
Considered one of the best data communications programs for the TI-99/4A. Complete with documentation.

#58. PR BASE
The alltime most popular and widely used data base program for the TI-99/4A. A freeware program that is widely supported and updated.

#59. GRAPH MAKER
A collection of the best programs for producing graphs and charts from your data. Exbasic and printer.

#60. FREDDY
A fantastic game where you guide the hero through underground passages filled with danger. Nintendo quality, great graphics and fast action. One of the best we have ever seen!!!

#61. THE MINE
A fast action game from F.R.G. that will keep you going for hours. Many screens and skills required.

#62. DISK MANAGER II MODULE BACKUP
The complete TI Disk Manager II on Disk. For legal reasons it is only available to owners of the original module for backup use.

#63. ASTROBLITZ/MAZOG
A pair of great games that continue where Parsec and Munchman leave off. Imagine Parsec with enemy space craft coming from in front and in back of your ship!!!

#64. MAJOR TOM/SPACE STATION PHETA
A pair of great space games. These two are going to keep you in front of the 99/4A for hours. Great!

#65. PERFECT PUSH
An all new space game where you assemble and launch a rocket ship in outer space while avoiding a space monster. This one is professional in very way..graphics, speed and action!!!

#66. HEBREW TYPEWRITER
This program converts your TI-99/4A keyboard into a typewriter that displays Hebrew letters on the screen. Can also be printed when used in conjunction with screen dump program (included). Great for religious training or making your copy of the dead sea scrolls or ten commandments!

#67. GENEALOGY
Now you can set up your family tree and store or print out the records. Great for keeping track of family relationships and records.

#68. CHESS
The original computer chess game Sargon has been reprogrammed for the TI-99/4A. Now play chess with your computer. Documentation included. Exbasic autoload.

#69. COMPUTER PLAYER PIANO/KEY-BOARD CHORD ANALYSIS
A unique music program which displays a piano on the screen and actually plays your selections.

#70. TI RUNNER II
The very latest (and best) "runner" game based on TI Runner and Star Runner. Great action, graphics and entertainment.

#71. KIDS LEARNING II
Two more disk sides loaded with the best in educational programs. Kids improve their math, spelling and comprehension skills while having fun.

#72. CERBERUS
Fantastic space game from Germany. Pilot your ship through narrow and crooked channels in space without colliding. Great graphics and music.

#73. CRYPTO (gram)
One of the best word games we have seen for any computer. Set up like a TV game show with great screen displays.

#74. LABEL MAKER II
Make labels for holidays and special events. You compose the text and select the resident graphics for the occasion.

#75. DISK CATALOGER
Now you can organize your disk files with this great utility. Files, sorts, and prints your records. Easy to use.

#76. PROGRAMMING AIDS AND UTILITIES II
A collection of very useful material. Includes a program to convert basic to exbasic so your old basic programs will load & run in exbasic, even with graphics. Also includes two on screen diagnostic programs to test your keyboard and processor. A great merge utility is also on this disk.

#77. MICROdex 99
A database program by Bill Gaskill which files and retrieves data such as magazine articles. A sample database is included.

#78. ARTCON+ BY RAY KAZMER
ATTENTION GRAPHX AND TI ARTIST USERS!!!
This program lets you convert Exbasic graphics to TI Artist and Graphx pictures. Also contains a new MAC-RLE (2) for converting from Artist to Graphx.

#79. DM1000 V3.5
One of the most popular disk managers for the TI-99/4A. Originally a rip-off of the CorComp manager, it has been improved and refined by talented users all over the world. This version is deemed the most reliable to date and is far advanced over the TI Disk Manager II. Distributed by permission from CorComp.

#80. BIRDWELL DISK UTILITY
A must if you are iunto programming and software development. Besides being a great disk manager, it has provision for copying sectors, comparing files and is menu driven. Complete with documentation.

#81. HOME ACCOUNTING SYSTEM
A complete family & small business accounting system including a checkbook manager, budget analysis, mailing list and an inventory program. Complete with documentation. Easy to modify for specific needs.

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This program from Australia creates a different puzzle each time you run it. Self contained with definitions and vocabulary taken from a leading crossword dictionary. Great crossword fun.

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A pair of great commercial quality games from EB Software of TI Runner fame. Galactic Battle is a space "trek" type strategy game for one or more players. Spy Adventure is an adventure game that will keep you guessing for hours.

#85. AUTOBOOT UTILITY
This utility which can be installed on a disk loads and runs or displays most files. Now you can have a disk with exbasic programs, Editor Assembler programs and TI Writer files and run or display them all from exbasic.

#86. COLUMN TEXT III V3.2
A very useful utility for printing TI Writer and 99 Writer II files in separate spaced columns. Saves hours in producing a newsletter. Complete with documentation.

#87. ARCHIVER III
This utility allows you to "pack" or combine several files into one for space utilization. A number of boards are sending files packed to save transmission costs. This utility will let you pack and/or unpack these files.

#88. AUSSIE GAMES VOL 1
A collection of games from our friends down under. Includes a great card game and board game. Hours of fun and entertainment. Includes Matchmaker & TILO.

#89. PROCALC
This is an on screen calculator for decimal/hexidecimal conversions and much more. A must for the serious programmer.

 # 90. JET CHECKBOOK MANAGER
This checkbook manager is considered the ultimate with every feature you can think of for keeping track of your checking account and keeping records of your spending for budget and tax purposes. Complete with documentation.

#91. "THE MAZE OF GROG"(St. Valentine)
Ray Kazmer has created a great maze game with fantastic graphics and the characters from his now legendary "Woodstock" disk. Fun for all!!!

#92. HOUSEHOLD INVENTORY
Written by 99/4 programming great Charles Ehninger, this prize winner originally sold for $59.95. Keeps track of household, business or personal items by category and provides automatic updating for inflation etc. A must for tax and insurance records!

#93. THE 1989 KBGB GIRLIE CALENDAR
This latest offering from programming master Ken Gilliland prints out a jumbo 12 month calendar with a knockout centerfold pinup for each month. If you like our #14 Figure Study disk, you will flip over this one. For Adults Only!! Exbasic & d/m printer.

#94. GREAT 99/4A GAMES VOL. 111
If you have seen vols. 1 & 2 of this series you know we only provide the very best. This latest volumn is also filled with a collection of great ones!

#95. WEATHER FORECASTER
The weather predictions are amazingly reliable and accurate! A great game "Lawnmower" and a mini database are also included to make this disk a fantastic value.

#96. STATISTICS & SORTING
Two great assembly utilities by John Clulow. STAT is a set of statistic routines for use in exbasic. SORT allows sorting by two separate fields and a choice of two types of sorts.

#97. MEMORY MANIPULATOR
This powerful utility lets you explore the entire memory in your 99/4A system and take apart what you find. User friendly!

#98. DAYS OF EDEN & DOORS OF EDEN
Two bible games)non-fiction) that work with the TI Adventure Module.

#99. GREAT 99/4A GAMES VOL. IV
This disk features the works of J. Peter Hoddie. All of these games are of commercial qualaity and well worth the donation requested!

#100. ASSULT THE CITY (T. of DOOM)
An exciting game for use with the Tunnels of Doom module. Several Exbasic bonus games are included.

#101. ENCHANCED DISPLAY PACKAGE
This screen enhancement utility lets you do 40 columns, windowing, reverse scrolling, clock/alarm, and a whole host of other great tricks in exbasic. Fully documented.

#102. COLOSSAL CAVES ADVENTURE
This classic adventure now available for the 99/4A is what led to the Zork series. Hours of text adventuring.

#103. SORGAN, THE 99/4A ORGAN
This program which is currently selling for big bucks on module turns your 99/4A into an electronic organ. Sound effects, different instruments and voices, chord forms, color graphics with complete control of all.

#104. C99 COMPILER AND LIBRARY
This two-sided (flippy) disk gets you into C programming with your 99/4A. Comes with a great collection of utilities such as text & graphics. (E/A)

#105. KING'S CASTLE+
A great arcade style assembly game formerly offered on module. Also includes an EB "Trek" game and a collection of sprite & graphics from Tigercub's Jim Peterson.

#106. QUEST (Dungeons & Dragons)
One of the best D&D games around! You must destroy the Dark Lord to free your homeland! Complete with documentation on disk.

#107. STAR TREK MUSIC ALBUM
Ken Gilliand's music and graphics version of the TV theme and the three motion pictures. (Exbasic)

#108. FUNLPLUS BY JACK SUGHRUE
Fantastic disk packed with Funnelweb (#42) templates, utilities and prog. to augment and configure Funnelweb. Unbeliveable collection of fantastic aids to make the best even better!

#109. TI-WRITER MINI MANUAL
This disk prints out a five page TI Writer manual with everything you need to know to use TI Writer or the many clones such as 99Writer II. Additional aids for using this powerful word processor are included.

#110. DISK + AID
A powerful disk sector editor formerly sold for $20. Menu Driven and easy to use.

#111. POP MUSIC & GRAPHICS
This exciting disk from Germany features music/graphics written in 100% assembly and what comes from the TI sound chip is sure to astound you.

#112. INVOICE PACK
An excellent invoice preparation and printing program with instructions on how to modify it for your own business.

#113. LABEL MAKER 3
A collection of label programs to create mailing and disk envelopes, disk labels and much more!

#114. PANORAMA
A drawing and illustration program that compliments Graphx and TI Artist. A must for the serious 99/4A artist!

#115. GRAPHICS DESIGN SYSTEM
A complete system for creating graphic screens in full color for your programs by J. Peter Hoddie. Fully documented.

#116. FOURTH TUTORIAL
A lesson in FORTH programming on how to create graphics.

#117. UNIVERSAL DISASSEMBLER
This powerful utility written in Forth allows disassembly of programs off disk in any format, in memory, and even off of P-Box cards. Very complete with some very unique features.

#118. FAST TERM
One of the most popular and recommended of the 99/4A terminal emulator programs. Supports TE-II, ASC11, and X-Modem transfers, print spooling and more. Loads from Exbasic or E/A.

#119. RAG LINKER
A utility for converting DIS/FIX 80 assembly object code files to PROGRAM image. This allows files to load faster and take up less space on disk. Full Doc

#120. BITMAC
The original BITMAC is now available at $4.95 with all original documentation. A powerful graphics program for the 4A which lets you print where you want..even over pre-existing text. Create great graphics in 16 colors, print text sideways, mirror image, upside down etc. etc. A **must** for anyone into 99/4A graphics. Comes with second bonus disk with utilities such as sign & banner makers. Even can computer generate your own signature!

#121. SUPER YAHTZEE & WHEEL II
If you like Yahtzee this disk is for you. A great version written in high speed assembly. Also included is another version of Wheel of Fortune which also lets you create your own puzzles with a puzzle edit program included.

#122. ADULT ADVENTURE
A trily adult adventure for use with the TI Adventure Module. Also included is a bonus adventure (not adult) "LOST GOLD" which is one of the better ones we have seen recently.

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EXPANDING YOUR SYSTEM—

(Continued from Page 19)

WHAT ABOUT MEMORY EXPANSIONS?

Like RS232 cards, memory expansions (not RAMdisks) are basically the same. They provide 48K of memory, though not all of it is directly accessible to the user for programs. This memory is divided between "stack" and "program" memory. When using Extended BASIC, stack memory amounts to 11,840 bytes while program memory amounts to 24,488 bytes. Stack memory is used to store information about string values, variables and arrays. Program memory is the space that is used when you load a program into memory or type a program using the console. (Note that the peripherals you connect to the system may reduce the amount of available RAM. A disk controller, for example, will use about 1K of program RAM.)

Memory is allocated differently when using assembly language programs, but we won't go into that here.

You may also note that with a standard "48K" memory expansion, you get a little more than 36K of memory. Actually, there is about 48K of memory available, but the additional 12K isn't accessible through Extended BASIC. You may have already guessed that the console memory counts for nothing when a memory expansion is installed.

There isn't much difference among memory expansions. They all provide the same amount of memory and they all work at the same speed.

So why bother with a memory expansion?

Because you can do a lot with it. A memory expansion allows you to take advantage of all the features of Extended BASIC or any of its clones, such as Super Extended BASIC. It lets you write larger Extended BASIC programs than can be written to console memory. And it is something you can't get along without if you intend to use Editor/Assembler. Over the past several years, many outstanding programs — applications, utilities and games — have been written in assembly language. While these programs frequently can be executed using a special loader that works through Extended BASIC, they require a memory expansion to run. Unless you intend to limit your computer use to cartridge programs or shorter Extended BASIC programs, you will definitely need a memory expansion. It is what unlocks the power of the TI programming languages.

Yes, you can get by with a Mini-Memory Module in place of Editor/Assembler to use many assembly language routines, but it won't run many of the better and larger assembly language programs written in the Editor/Assembler environment. The whole point about the Basic Expanded System is to gain access to the entire galaxy of TI programs, not just a portion of them.

WHAT ABOUT AN EXPANSION BOX?

In order to use peripheral cards such as a disk controller and memory expansion, you will need a box to put them in. The TI Peripheral Expansion Box will hold up to eight cards and comes with a cable that connects to the right side of the TI console and into a system card in the PEB. The PEB includes a cooling fan and power supply. A PEB is required if you expand your system using peripheral cards. Other ways to expand include so-called "side-car" peripheral devices and the CorComp Micro-Expansion System. But more on that next month.

HOW MUCH WILL IT COST?

There you have it: the Basic System and the Basic Expanded System. It is the difference between night and day. The best programs now available for the TI, of which there are thousands, require a disk system and memory expansion. Forgetting about the RS232 card for now, if you are looking at really using your TI you will definitely need a memory expansion and a disk system. Period.

What about costs?

If you are a bargain hunter, you can find them without straying too far from home. I know of a plumber who recently purchased a TI PEB with memory expansion, RS232 card and disk controller from a Goodwill store for $20. And he wasn't even looking for a TI, though he knows a bargain when he sees it.

That's an unusually good deal, but the deals are in the finding. Flea markets may also be a good place to roam when looking for used computer equipment. Computer fairs, particularly those dedicated to TI computers, are also good sources for equipment. More generic, PC-oriented shows are also worth investigating when looking for disk drives, power supplies, monitors and the like.

Of course, the downside to purchasing used equipment from strangers is that it may not work when you get home. In many cases, it's a calculated risk. Of course, you can advertise your needs through classified ads in a user group newsletter, local newspaper or MICROpendium. (MICROpendium has published the addresses and contacts of more than 100 active user groups through North America, Europe and Australia.) And don't forget advertisers in MICROpendium. A variety of peripherals are available through display and classified advertisers, with entire systems available for $400 or less.

When you consider that it was common to pay more than $1,000 for a Basic Expanded System five years ago when there was not nearly the variety or quality of software available as there is today, the amount you will spend today makes a Basic Expanded System look like the bargain of the decade.

Next month: Is a PEB a better buy than a Micro-Expansion System, and the next step beyond the Basic Expanded System — a color monitor.

Typical prices for used equipment

Peripheral Expansion Box	$50-$125
Memory expansion	$40-$75
RS232 card	$25-$60
SSSD floppy disk drive (full ht.)	$20-$50
DSDD floppy disk drive (½ ht.)	$40-$75
TI disk controller	$40-$80
CorComp/Myarc disk controller	$100-$150

Prices of used equipment will vary depending on condition and the local market. Look for used equipment at computer fairs, flea markets, garage sales, computer user groups and classified ads. For new equipment, see advertisements in this and other issues of MICROpendium as well as dealer catalogs.

PRESS is demo'd at TI Expo

By LAURA BURNS

Asgard Software's PRESS was demonstrated at the Washington TI Expo Sept. 16, but neither the manufacturer or the author would give a firm date as to the long-awaited program's release.

Chris Bobbitt of Asgard Software said, however, that it was possible the program might meet its early October deadline.

Charles Earl, the author, demonstrated the program. He said the 80-column editor and the 40-column editor are working, that 255-256 colors are available and that the number of documents or pages are limited only by disk storage capacity.

The program allows for mouse or joystick implementation for functions other than typing words, Earl said.

Macros are also limited only by disk storage capacity, he said, and the program will do snaking columns. He said touchup work on the screen, work to compress the spellchecker and the print section was waiting completion, as well as some debugging.

Asgard also presented other software later in the program.

JP SOFTWARE ANNOUNCEMENTS

JP Software announced some programs "in the works" with no release date yet including a file identifier program by Mike Dodd which can scan a disk, find the files and tell what they are (for instance, TI Artist — Font, Multiplan — SYLK, E/A — Load & Run). It also lists the file type as "unknown" if the type is not included on the program. He said this is useful for persons with stacks of disks they cannot identify readily.

TRIAD FOR GENEVE

Also under development is a version of Triad by Wayne Stith for the Geneve 9640. Stith said he has the terminal emulator section of the program almost completed. Triad combines a terminal emulator, file transfer capability with a built-in editor and a disk manager.

Available programs include Chainlink, a solitaire game, and AV-Index, a program for labeling and indexing audio and video cassettes. Portions of the GenProg development environment for the Geneve are available also. (See Newsbytes August 1989.)

Barry Boone discussed his GIF viewer for use with the Mechatronics 80-column card.

HARDWARE AT EXPO

Hardware discussions were by Bud Mills and by Tony Lewis, who introduced his *Interface Standard and Design Guide for the TI* at TI-Expo. (See Newsbytes this issue.) A "hardware museum" displayed equipment and also reportedly offered assistance to users.

The event was sponsored by the Mid-Atlantic 99ers. Besides the program, other vendors and manufacturers sponsored booths. Organizers estimated 300 in attendance throughout the day.

Al Beard touts FORTRAN as language to learn

FORTRAN is a good choice for individuals wanting to move on from BASIC to other languages, Al Beard of LGMA (Little Green Men Associates) Products, told attendees at the TI International Expo Sept. 16 in Virginia.

Beard, author of 99 FORTRAN and 9640 FORTRAN, explained that BASIC was created because FORTRAN was found to be "a little difficult for a college student's first class."

Beard said the 9640 version of FORTRAN offers new features which use the power of the Geneve. It uses the Quick and Dirty Editor by Clint Pulley and includes a tutorial.

Suggested retail for 99 FORTRAN is $49.95 and for 9640 Fortrain is $69.95. Beard said dealers include Tenex, Quality 99 and Disk Only Software.

Other languages discussed included c99 by Tom Wible and Myarc's Advanced BASIC by Lou Phillips.

STARFLEET TECHNICAL DRAWINGS

The Starfleet Technical Drawings are a collection of precision drawings focusing on the various spacecraft that have appeared in the original Star Trek television series, the new syndicated Star Trek: The Next Generation television series, and the five Star Trek motion pictures from Paramount. Each individual drawing can be viewed, altered, and printed using TI Artist or TI Artist PLUS!. In addition to the drawings, included with each disk is a small command file that allows the drawings to be viewed in a slide show using format Display Master. Both Starfleet packages contain three disks each. Requires: TI Artist, TI Artist PLUS!, or Display Master (all sold separately).

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Selecting a hard disk drive

Avoid RLL drives and make sure what you want is what you get

By JIM UZZELL

There are four things to consider when buying a hard disk:

- Capacity
- Access time
- Type of drive
- Interface — Myarc is the only source with its Hard and Floppy Disk Controller

Drives commonly sold these days come with a capacity starting at 5 megabytes and ranging through 10, 20, 30, 40, 60, 80, 100 and more. For most Geneve 9640 and TI99/4A users, a 20-megabyte drive ($200-250) will be adequate.

Access time provides one indication of how well a drive performs. The term refers to the average amount of time it takes the Read/Write head to move from any one track on the disk to any other. The lower the access time, the better the performance, and higher the price.

The average access time is hardware dependent, for the most part. How fast the head can move to a track depends on the technology used in the Read/Write head arm. Older "stepper motor" heads rely on a largely mechanical process where the heads make incremental steps from one track to the next. Newer "voice coil" drives use Read/Write armatures that rely on a less mechanical, smooth-action process that helps to decrease the average access time. Average access times of voice-coil drives is anywhere from 18 to 40 milliseconds. Stepper-motor drives commonly have access times of 60 milliseconds or more.

Another factor that will reduce the Read/Write efficiency of a drive, especially over time, has to do with file fragmentation. This is probably the largest single factor regarding loss of drive performance. As random clusters are made available throughout the disk due to erased files, new files are divided among them, making them harder to write and read.

There is a way to partially get around this inefficiency — if you have a fairy godmother with deep pockets: Buy an extremely high capacity drive (i.e. 100MB). The reason for this is simple: Drives of this size typically use up to 5 platters. That means that up to 10 tracks of data (60 to 80K) can be stored in a single cylinder, which results in fewer head changes.

The type of drive you use also has a direct impact on performance, depending on how information is stored on a hard disk. Information may be recorded on a disk drive in many ways, but two formats are popular for personal computers. They are:

- MFM (Modified Frequency Modulation)
- RLL (Run-Length Limited)

MFM is the recommended format for use with the Myarc Hard and Floppy Disk Controller. An update of the Myarc HFDC manual dated Feb. 3, 1989 states categorically: "Do not use a drive marked RLL." When purchasing a hard drive, always verify that it is not an RLL drive.

Hard disk drives specifications

The following list of hard disk drives is provided only as information. Use the information for comparisons and always verify with dealers prior to purchasing that a particular hard disk drive model is compatible with a Myarc HFDC. In many cases, the capacity of the drive is prior to formatting. A Seagate ST225, for example, has 26 megabytes of unformatted capacity, which is reduced to about 20 megabytes after formatting.

The drives listed here support the ST506 and ST412 interface specifications, though some may be cards designed only for PCs.

DEFINITIONS

Cap=Capacity in megabytes
Cyds=Number of cylinders
Hds=Number of heads
WPC=Recommended write precompensation
Type=Recording format

Manufacturer — CMI

Model	Cap.	Cyd.	Hds.	WPC	Type
CM3426	20	612	4	300	
CM5025	20	256	2		
CM5410	20	256	4		
CM5616	20	256	6		
CM6426	21	615	4	256	MFM
CM6426S	20	640	4	256	
CM6640	32	615	6	300	

Manufacturer — FUJI

Model	Cap.	Cyl.	Hds.	WPC	Type
309-26	26	615	4		
303-52	52	615	8		

Manufacturer — FUJITSU

M2230AS	5	306	2		
M2233AS	10	306	4		
M2234AS	15	306	6		
M2235AS	20	306	8		
M2230AT	5	306	2		
M2233AT	10	306	4		
M2241AS	26	754	4		
M2242AS	46	754	7		
M2243AS	72	754	11		

Manufacturer — HITACHI

DK511-3	30	699	5	300
DK511-5	43	699	7	300
DK511-8	72	823	10	400

Manufacturer — IMI

5006H	5	306	2	128
5012H	10	306	4	128
5018H	15	306	6	128

Manufacturer — LAPINE/KYOCERA

3062	10	306	4
3512	10	306	4
3522	10	306	4
LT-200	26	615	4
LT-2000	26	615	4

Manufacturer — MICROSCIENCE

HH325	21	615	4	
HH312	10	306	4	128
HH612	10	306	4	

Manufacturer — MINISCRIBE

Model	Cap.	Cyl.	WPC	Type
1006	5	306	2	
1012	10	306	4	
2006	5	306	2	128
2012	10	306	4	128
3012	10	612	2	300
3212	10	612	2	300
3412	21	306	4	
4010	8	480	2	128
4020	15	480	4	128
8212	10	615	2	
8425	20	615	4	

Manufacturer — MMI

M125	20	612	4	300
M225	20	612	4	300
M325	20	612	4	300

Manufacturer — NEC

5124	11	309	4	
5126	21	612	4	
5146	43	615	8	

Manufacturer — RODIME

R0101	3	192	2	
R0102	7	192	4	
R0103	10	192	6	
R0104	13	192	8	
R0201	6	321	2	
R0202	11	321	4	
R0203	17	321	6	132
R0204	22	321	8	132
R0201E	10	640	2	
R0202E	20	640	4	
R0203E	33	640	6	

(See Page 28)

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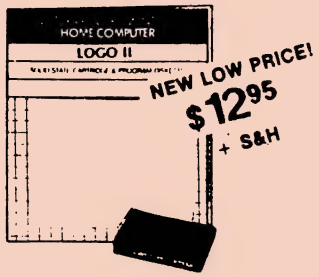
TI Multi-Plan

Electronic Worksheet with many advanced features and built-in ease of use. Requires disk drive and controller, and 32K memory Expansion Unit. Printer and RS-232 Interface recommended. Cartridge and Disk.

TI Writer

This is a professional word processing system for the TI-99/4A. Provides the features and ease of use found in office systems. Requires disk drive. 32K Memory and Printer. Module and Disk.



Logo II

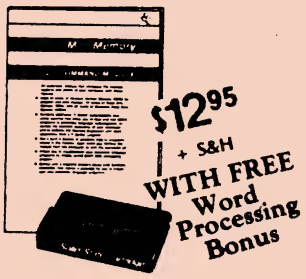
In use by educators throughout the country. Requires cassette or disk based system and 32K memory expansion.

Editor/Assembler

This is the complete version with manual, module, program disk and the disk version of Tombstone City as an example of assembly language programming. 32k and disk drive are required. This package will allow you to program the 99/4A in TMS 9900 Assembly Language and gives you access to all system features. Provides the fastest speed possible from the 16-bit processor!

Original TI-Extended Basic Still the BEST for Less!

A powerful, high-level programming language that expands the capability of your TI-99/4A Home Computer. Includes TI Extended BASIC module (36K bytes of preprogrammed memory) and Owner's reference manual.



Mini-Memory

This software cartridge adds memory to your system. Totals 14K of memory (6K of GROM, 4K of ROM, 4K of RAM). Mini Memory includes a built-in battery, permitting programs and data stored in RAM to be retained even if module is removed from console.

BONUS: FREE **Mini-Writer** I word processor (a $19.95 value) with Mini-Memory Purchase.

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EXTENDED BASIC II PLUS BY Mechatronic..ExBasic plus 44 K Bytes of preprogrammed memory plus graphics.$44.95
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TI LOGO WORKBOOK (with LOGO).....$ 1.00
TEACH YOURSELF EXBASIC ON DISK (with any exbasic)$ 1.00
"INTRO TO ASSEM. LANGUAGE" (with Ed/Assem).....$ 1.00
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HARD DISKS—

(Continued from Page 26)

Model	Cap.	Cyd.	Hds.	WPC	Type
R0204E	45	640	8		
R0252	10	306	4		
R0352	10	306	4		
Manufacturer — SEAGATE					
ST125	26	615	4		
ST138	38	615	6		
ST206	5	306	2	128	
ST212	10	306	4	128	
ST213	11	615	2	300	
ST225	26	615	4	300	MFM
ST238R	38	615	4	300	
ST251	51	820	6		MFM
ST251-1	51	820	6		MFM
ST406	5	306	2	128	
ST412	11	306	4	128	
ST419	15	306	6	128	
ST506	5	153	4	128	
ST706	5	306	2	128	
Manufacturer — SHUGART					
SA604	6	160	4		
SA606	8	160	6		
SA612	10	306	4	128	
SA712	11	320	4	128	
Manufacturer — TANDON					
TM-252	10	306	4		
TM-353	10	306	4		
TM-262	21	615	4		
TM-362	21	615	4		
TM-501	5	306	2	128	
TM-502	10	306	4	128	
TM-503	16	306	6	128	
TM-602S	5	153	4		
TM-603S	8	153	6		
TM-603SE	12	230	6	128	

The following drives use voice-coil technology. However, it is not certain whether they conform to the ST506 or ST412 interface standards. It is not known which are hard disk cards.

Model	Cap.	Cyd.	Hds.	WPC	Type
Manufacturer — ATASI					
AT3020	635	3			
AT3033	28	635	5		
AT3046	38	635	7	323	
AT3051	42	704	7	352	
AT3051+	43	733	7	368	
AT3085	71	1024	8		
Manufacturer — BULL					
D530	25	987	3		
D550	43	987	5		
D570	60	987	7		
D585	71	1166	7		
Manufacturer — CDC					
9415-21	21	697	3		
9415-25	25	612	4		
9415-28	28	612	4		
94155-36	36	697	5		
94155-48	48	925	5		
94155-51	51	989	5		
94155-57	57	925	6		
94155-67	67	925	7		
94155-72	72	925	9	128	
94155-77	77	925	8		
94155-86	86	925	9	128	
Manufacturer — MAXTOR					
XT1065	57	918	7		
XT1085	71	1024	8		
XT1105	88	918	11		
XT2085	75	1224	7		
XT2085-	62	1024	7		
Manufacturer — MICROPOLIS					
1302	22	830	3		
1303	36	830	5		
1304	43	830	6		
1323	42	1024	4		
1323A	53	1024	5		
1324	64	1024	6		
1324A	74	1024	7		
1325	85	1024	8		
1333A	53	1024	5		
1334	64	1024	6		
1335	85	1024	8		
Manufacturer — MINISCRIBE					
6032	27	1024	3		
6053	45	1024	5		
6074	62	1024	7		
6085	71	1024	8		
Manufacturer — MITSUBISHI					
MR522	22	612	4	300	
MR533	25	971	3		
MR535	42	971	5		
Manufacturer — QUANTUM					
Q520	18	512	4	256	
Q530	27	512	6	256	
Q540	36	512	8	256	
Manufacturer — SEAGATE					
ST4026	21	615	4	300	
ST4038	38	733	5	300	
ST4038M	32	733	5		
ST4051	43	977	5	300	
ST4051N	43	977	5		
ST4053	53	1024	5		
Manufacturer — TANDON					
TM-702AT	21	615	4		
TM-703	30	695	5		
TM-703A	32	733	5		
TM-705	42	695	5		
Manufacturer — TOSHIBA					
MK53F	36	830	5	512	
MK54F	51	830	7	512	
MKM-0353	72	830	10	512	

BARGAINMODEM

A quick and dirty terminal emulator

By WAYNE STITH

© 1989 by W.L. Stith

One of the most frustrating experiences for TI users just getting into telecommunications is discovering that the Terminal Emulator II cartridge cannot give one access to the richest resource BBS's and networks provide, the file libraries. Time and again I have read messages from new users asking how to download files via the TEII protocol. Sysops usually go through a litany of questions, only to finally recommend that the user get a copy of a communications program on disk. There has to be a better way.

The program published here is a stopgap measure designed to give the new user a functional terminal emulator which includes an XMODEM routine. It will serve just long enough for the user to download one of the popular terminal emulators from a BBS or network. You must have a cartridge which will load a DIS/FIX 80 file, such as the Editor/Assembler and Mini-Memory cartridges, or the Extended BASIC cartridge running Funnelweb.

After you load the program, the screen will clear. Since this is a bargain basement program designed to be short enough to type in quickly, many amenities have been left out: As written the program functions only at 300 baud, 8 data bits, 1 stop bit, no parity, and from port 1. Incoming text will appear as one long string; there is no scrolling; when the screen is full, it will clear. XMODEM works only one-way, i.e. only for downloading. Any file you download must be a TI file (with the "TI header") and will be saved to DSK1.DOWNLOAD.

The XMODEM implementation included here is minimal. Since it is of general interest, the following explanation of the original XMODEM protocol is included:

The receiving program sends a NAK (ASCII 21) to tell the host it is ready for the file. The host then sends a packet of data and waits for the receiver to send an ACK (ASCII 6) acknowledging receipt. This procedure repeats until the host has sent all the data, at which time it sends an EOT (ASCII 4) instead of a packet to tell the receiver that it is done.

The packet sent contains the following information: an SOH (ASCII 1) to mark the beginning of the packet, followed by the packet number. The packet number can go up to 255, after which

(See Page 30)

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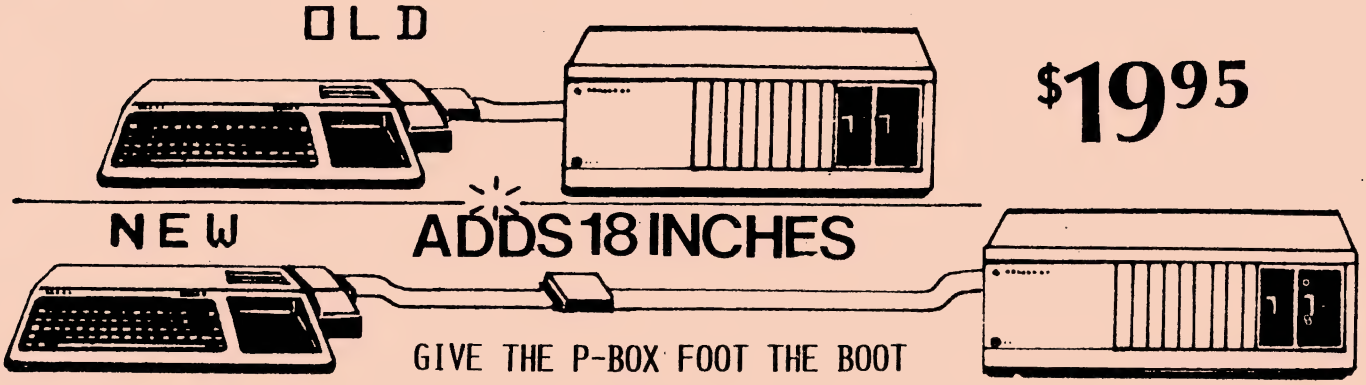

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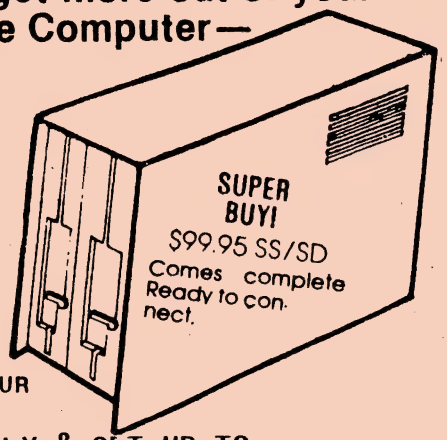

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BARGAINMODEM—

(Continued from Page 28)

it rolls over to 0 like a speedometer. (The first packet is numbered 1, though). The next byte is the same packet number in ones-complement form. The next 128 bytes are the data, and the last byte is the checksum, which is simply the sum of the 128 data bytes, ignoring anything to the "left" of the least significant 8 bits. There are several ways that the receiver can determine that the data sent is incorrect: The SOH is missing; the packet number is the wrong one; the ones-complement of the packet number is wrong, or the checksum is wrong. If any of these conditions occur, the receiver sends a NAK and the host resends the packet.

The source code below is extensively commented to enable you to make changes easily.

BARGAINMODEM

```
0001         DEF  START
0002         REF  VSBW,VMBW,VSBR,KSCAN,DSRLNK,VWTR
0003         AORG >A000
0004
0005 REGS    EQU  >B000        Workspace
0006 SCREEN  DATA 0            Holds next screen address to use
0007 TIMER   DATA 0            Timeout value
0008 SET     DATA >2000        Constant
0009 VWHERE  DATA 0            Where to store data in VDP for disk work
0010 SEXWRT  DATA 0            Number of sectors written to disk so far
0011 REC     DATA 0            Packet number for XMODEM transfer
0012 SECTIN  DATA 0            Number of sectors received
0013 MUCH    DATA 32           Number of sectors buffer can hold
0014 OPEN    DATA 0            Flag: if zero, file has not been opened
0015 FIRST   DATA 0            If zero, then the packet coming in is the first o
ne
0016 HALF    DATA 0            If zero, the first 1/2 of a sector has been store
d
0017 EOF     DATA 0            If non-zero, the other system has said it is done
0018 ONE     DATA 1            Constant
0019 X256    DATA 256          Constant
0020 OUTPAB  DATA >0115        PAB for direct output file
0021 NAME    TEXT 'DOWNLOAD  ' Name for the file
0022 FAILMS  TEXT 'FAILED'     Messages indicate whether file was received OK
0023 OKMSG   TEXT 'SUCCESSFUL!'
0024 FCTN6   BYTE 12           Test value for FCTN6
0025 DRIVE   BYTE 1            Drive number
0026         EVEN
0027
0028 START   LWPI REGS         Load my workspace
0029         LI   R0,>01F0
0030         BLWP @VWTR        Set to 40 columns
0031         MOVB @REGS+1,@8304   Save VDP R1
0032
0033         LI   R12,>1340    Initialize RS232 card port 1
0034         SBO  31           Clear the port's current values
0035         LI   R0,>8300     Set up for initialization
0036         LDCR R0,8         Initialize to 8N1
0037         SBZ  13
0038         LI   R0,>04D0     This is the baud rate
0039         LDCR R0,12        Send the baud rate to the RS232
0040 READY   LIMI 2            Allow interrupts
0041         LIMI 0
0042         SBO  16           Turn on Request-to-Send bit
0043         TB   27           Test Data-Set-Ready bit
0044         JNE  READY        Not ready?
0045         SBZ  16           Turn off Request-to-Send bit
0046
0047         BL   @CS          Clear screen
0048
0049 CKPORT  CLR  R1
0050         BL   @GET1        See if there is an incoming character
0051         ANDI R1,>7F00     Strip out high bit (leftmost bit)
0052         JEQ  KEY          Zero?
0053         BL   @UPDATE      No, put it on the screen
0054
0055 KEY     BLWP @KSCAN       Scan keyboard
0056         MOV  @>837C,R3    Fetch keyboard status
0057         LIMI 2            Allow interrupts in case you want to QUIT
0058         LIMI 0
0059         COC  @SET,R3      Do we have a new key?
0060         JNE  CKPORT       No
0061         MOVB @>8375,R1    Yes
0062
0063         CB   R1,@FCTN6    Is the key FCTN6?
0064         JEQ  XMODEM       Yes
0065         BL   @SENBYT      No, send the byte to the port
0066         JMP  CKPORT       Check for incoming text
0067
0068 * Receive XMODEM file
0069
0070 XMODEM BL   @CS           Clear screen
0071         MOV  @ONE,@REC    Set packet number to 1
0072         CLR  @EOF         Clear flags
0073         CLR  @SECTIN
0074         CLR  @FIRST
0075         CLR  @HALF
0076         CLR  @OPEN
0077
0078         LI   R0,MYINT     Address of user interrupt routine
0079         MOV  R0,@>83C4    Set up user interrupt hook
0080
0081         LI   R0,>1000
0082         MOV  R0,@VWHERE   We will start storing data at VDP >1000
0083 BEGIN   LI   R0,7*60      Set up the interrupt timer for 7 seconds
0084         MOV  R0,@TIMER
0085
0086 HANDSH  LI   R1,>1500
0087         BL   @SENBYT      Send NAK to tell the host to start
0088
0089 HANDS1  CLR  R1
0090         BL   @GET1        Try to get a byte from port
0091         ANDI R1,>7F00     Zero?
0092         JNE  HANDX        No, proceed
0093         LIMI 2            Let in interrupts so that the timer may be
0094         LIMI 0            decremented
0095         MOV  @TIMER,R0    Is the timer zero?
0096         JEQ  BEGIN        Yes, must reset timer and send NAK again
0097         JMP  HANDS1       No, try to get a byte again
0098
0099 HANDX   CI   R1,>0100     Was the byte SOH?
0100         JEQ  GETNUM       Yes, proceed
0101         CI   R1,>1800     Did the host send a CANcel (ASCII 24)?
0102         JNE  HANDS1       No, try to get a byte again
0103         B    @FAIL        Yes, cancelled by host
0104
0105 TOP     CLR  R1
0106         BL   @GET2        Get a byte
0107         JEQ  TOP          Null?
0108         CI   R1,>0100     SOH?
0109         JEQ  GETNUM       Yes
0110         CI   R1,>0400     EOT received?
0111         JNE  TOP          No, try again
0112         SETO @EOF         Yes, set a flag
0113         B    @WRITE       Write whatever we already have to disk
0114
0115 GETNUM CLR  R1
0116         BL   @GET2        Get packet number
0117         MOV  @REC,R2      Fetch the packet number we have stored
0118         SLA  R2,8         Put it in the high byte
0119         CB   R2,R1        Does it match what we just received?
0120         JNE  BADREC       No, the received byte was bad
0121
0122         INV  R2           Yes, do ones complement on our packet number
0123         BL   @GET2        Get ones-complement packet number from host
```

(See Page 32)

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BARGAINMODEM—

(Continued from Page 30)

```
0124          CB   R2,R1        Does it match what we just received?
0125          JNE  BADREC       No, bad packet number
0126
0127          CLR  R10          Clear the checksum accumulator
0128          LI   R3,SLAST     Pointer to buffer area (just after this program)
0129          LI   R2,128       Loop counter
0130 GET128   BL   @GET2        Get a byte
0131          MOVB R1,*R3+      Store in buffer
0132          AB   R1,R10       Add to accumulator
0133          DEC  R2           Decrement loop counter
0134          JNE  GET128       Done?
0135
0136          BL   @GET2        Get the checksum from host
0137          CB   R1,R10       Does their checksum match ours?
0138          JEQ  OK128        Yes, skip ahead
0139
0140 BADREC   LI   R0,5*60      Set up for 5-second delay to make sure the line
0141          MOV  R0,@TIMER        is clear
0142 BAD1     LIMI 2            Allow interrupts to decrement the timer
0143          LIMI 0
0144          MOV  @TIMER,R0    Waited long enough?
0145          JNE  BAD1         No
0146
0147          LI   R1,>1500     Send a NAK to the host for bad packet
0148          BL   @SENBYT
0149          JMP  TOP          Try to get the packet again
0150
0151 OK128    INC  @REC         Good packet, Increment our packet number
```

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PS Form 3526, Dec. 1985 *(See instruction on reverse)*

```
0152          C    @X256,@REC   Have we reached 256? (which would be too much)
0153          JNE  OK128A       No
0154          CLR  @REC         Reset to zero (not 1!)
0155
0156 OK128A   MOV  @FIRST,R0    Is this the first packet in?
0157          JNE  VDP128       No
0158
0159          SETO @FIRST       Yes, we must open the file on disk
0160          LI   R0,SLAST+8   Skip the first 8 bytes (TI identifier)
0161          LI   R1,>8302     Store the next 8 bytes in scratchpad RAM,
0162          MOV  *R0+,*R1+      they are the file's parameters
0163          MOV  *R0+,*R1+
0164          MOV  *R0+,*R1+
0165          MOV  *R0+,*R1+
0166          SB   @>834D,@>834D  This will force the file to open
0167
0168          LI   R0,>F800     Send PAB and name to VDP
0169          LI   R1,OUTPAB
0170          LI   R2,12
0171          BLWP @VMBW
0172
0173          BL   @DSR         Access the disk
0174          JMP  SENACK       Send ACK to tell host we got the packet OK
0175
0176 VDP128   MOV  @VWHERE,R0   Fetch VDP address
0177          LI   R1,SLAST
0178          LI   R2,128
0179          BLWP @VMBW        Write this packet to VDP
0180          A    R2,@VWHERE   Reset pointer for next time
0181
0182          MOV  @HALF,R0     Which part of sector?
0183          JNE  CKMUCH
0184          SETO @HALF
0185          JMP  SENACK       We did first half, so ACK this packet now
0186
0187 CKMUCH   CLR  @HALF        We have completed a sector
0188          INC  @SECTIN      Increment sector count
0189          C    @SECTIN,@MUCH    VDP buffer full?
0190          JEQ  WRITE        Yes
0191
0192 SENACK   LI   R1,>0600
0193          BL   @SENBYT      Send ACK
0194          B    @TOP         Get another packet
0195
0196 WRITE    LI   R0,>1000     Reset VDP pointer for next time
0197          MOV  R0,@VWHERE
0198
0199          BL   @DSR         Access disk
0200          CLR  @SECTIN      Clear for next time
0201
0202          MOV  @EOF,R0      Did the host send EOT?
0203          JEQ  SENACK       No
0204          LI   R1,>0600
0205          BL   @SENBYT      ACK the EOT to let host know we know it is done
0206
0207          LI   R1,OKMSG
0208          LI   R2,11
0209 DOMSG    CLR  R0           Exit message
0210          BLWP @VMBW
0211 EXIT     B    @CKPORT      Return to normal terminal emulation
0212
0213 MYINT    DEC  @TIMER       This interrupt routine simply decrements a timer
0214          RT                Return to console interrupt handler
0215
0216 FAIL     LI   R1,FAILMS    Failed transfer
0217          LI   R2,6
0218          JMP  DOMSG        Show it
0219
0220 * Access disk
0221
0222 DSR      CLR  @>8350       Indicate that the extra parameter block is >8300
0223          MOVB @DRIVE,@>834C    Set up drive number
0224          LI   R0,>0F82
```

(See Page 33)

BARGAINMODEM—

(Continued from Page 32)

```
0225          MOV  R0,@>834E    Tell DSR routine where the name is in VDP
0226          LI   R0,>1000
0227          MOV  R0,@>8300    Point to VDP sector buffer
0228          LI   R0,>0F80
0229          MOV  R0,@>8356    Tell DSRLNK where the PAB is
0230          MOV  @OPEN,R1     Is the file already open?
0231          JNE  DOWR         Yes
0232
0233          SETO @OPEN        Set flag
0234          BLWP @DSRLNK      Open the file
0235          DATA >A           Code for low-level routine
0236          JEQ  FAIL         If disk error occurs, abort
0237          CLR  @SEXWRT      Number of sectors already written
0238          RT                Go home
0239
0240  DOWR    MOV  @SECTIN,R0   Number of sectors to write this time
0241          SWPB R0
0242          MOVB R0,@>834D    Tell the DSR how many sectors to write
0243          MOV  @SEXWRT,@>8302   Begin write with this sector
0244          A    @SECTIN,@SEXWRT  Set up for next time
0245
0246          BLWP @DSRLNK      Write to disk
0247          DATA >A
0248          JEQ  FAIL
0249          RT
0250
0251  * Send a byte to the host system
0252
0253  SENBYT TB   22            Is the RS232 ready? (Transmit-Buffer-Ready bit)
0254         JNE  SENBYT        No
0255         SBO  16            Yes, turn on Request-to-Send bit
0256         LDCR R1,8          Send 8 high bits of R1 to RS232
0257         SBZ  16            Turn off Request-to-Send bit
0258         RT
0259
0260  * The following two routines accomplish much the same thing. The first
0261  * will return to the caller even if no byte has been received; the second
will
0262  * wait forever until a byte has been received.
0263
0264  GET1   TB   21            Has RS232 received a byte? (Receive-Buffer-Ready)
0265         JNE  GET1A         No, return without a byte
0266         STCR R1,8          Yes, put the byte into the high byte of R1
0267         SBZ  18            Turn off Receive-Interrupt-Mode bit
0268  GET1A  RT
0269
0270  GET2   TB   21
0271         JNE  GET2          Wait until a byte has been received
0272         STCR R1,8
0273         SBZ  18
0274         RT
0275
0276  * Put a character on screen
0277
0278  UPDATE MOV  @SCREEN,R0    Fetch screen location
0279         BLWP @VSBW         Put the byte on the screen
0280         INC  R0            Point to next screen location
0281         CI   R0,960        Too far?
0282         JEQ  UPD           Yes
0283         MOV  R0,@SCREEN    Store new screen location
0284         RT
0285
0286  UPD    MOV  R11,R10       Move return address
0287         BL   @CS           Clear screen
0288         B    *R10          Return
0289
0290  * Clear the screen
0291
0292  CS     LI   R0,>0040      Point to top left corner, reversed bytes
0293         MOVB R0,@>8C02     Send part of address to VDP
0294         SWPB R0
0295         MOVB R0,@>8C02     Send rest of address to VDP
0296         LI   R0,960        Loop counter
0297  CS1    MOVB @SET,@>8C00   Send a space to the screen
0298         DEC  R0            Done?
0299         JNE  CS1           No
0300         CLR  @SCREEN       Yes, reset pointer
0301         RT
0302
0303  SLAST  END  START
```

READER TO READER

Mike McCasline of the Saddle Back Valley 99/4A User Group, P.O. Box 2752, Costa Mesa, CA 92628, writes that he is working with Jim Peterson of Tigercub Software and Bill Gaskill, TI programmer and author, to update a list of users' groups worldwide.

He is seeking information on the following "lost" clubs, for which the update surveys were returned by the post office:

Arkansas: Jacksonville TI User Group, P.O. Box 91, Jacksonville, AR 72076; Saline 99er User Group, 422 South Main, Denton AR72015.

Florida: Daytona 99ers East, P.O. Box 4594, Daytona FL

Georgia: Boto Users Group, P.O. Box 12801, Colubus GA 31907.

Illinois: Lincoln Land 99er User Group, c/o Gary Woerner, P.O. Box 1434, Springfield, IL 62705.

Massachusetts: New England Users Group, 99 School St., Weston, MA 02193.

Mississippi: Mississippi Gulf Coast TI Users Group, c/o Rich Davies, 7752A Cabell, Biloxi, MS 39531.

Nebraska: Greater Omaha Users Group, c/o Dee Turner, 11215 Crippen Circle, Omaha, NE 68138.

New Jersey: Depford Chapter of Delaware Valley Users Group, 1205 North Blackhorse Pike, Runnemede, NJ 08078; The 9900 User Group, P.O. Box K, Morristown, NJ 08057.

North Carolina: Carolina 99/4A Users Group, P.O. Box 13351, Greensboro, NC 27405; Fayetteville 99ers, c/o Ken Breits, 275 Murray Fork Dr., Fayetteville, NC 28304.

Ohio: Eco 99er Users Group, P.O. Box 1601, East Canton, OH 44730; Greater Dayton 99ers, P.O. Box 248, Englewood, OH 45322.

Pennsylvania: Ft. Washington Users Group, 3730 Lynford St., Philadelphia, PA 19149; Pilgrims Pride, 5 Williams Lane, Hatboro, PA 19040.

South Carolina: Sumter Computer 99ers, 875 Bay Blossom Ave., Sumter, SC 29150.

Texas: Expressway Home Computer Group, 13510 Central Expressway, Dallas, TX 75266; Greater Randolph 99ers, P.O. Box 721, Randolph AFB, TX 78148.

Stephen Shaw of Stockport, England, writes to suggest that Donald Andrews (Reader to Reader, August 1989) can print Personal Record Keeping files can easily be printed in 132-column mode, using the additional utility module TI provided, called Personal Report Generator. He says Tex-Comp or L.L. Conner Enterprises should have the module and manual, "but if he experiences difficulty, I would be delighted to help out as best I can." Shaw's address is 10 Alstone Rd., Stockport, Cheshire, England SK4 5AH.

Shaw says he needs "an efficient machine programmer to code various hi-res programs using short and simple supplied algorithms. The catch is the need for *real* speed, using scratch pad RAM and wherever possible using faster routines than those supplied as standard in ROM! An interest in graphic work and an abiilty to dump a bit map screen in TI-Artist format would be useful — no payment except some interesting algorithms yielding fascinating results, and a good programming challenge!"

The *Reader to Reader* is a column to put TI99/4A and Geneve 9640 users in contact with other users. Anyone with a specific problem or question that may be answered by other readers is encouraged to submit at item. Be sure to address it to Reader to Reader; c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

GENEVE 9640

MY-BASIC nears final version

Lou Phillips promises BASIC compiler

By WALT HOWE

Lou Phillips of Myarc showed the nearly completed Myarc Advanced BASIC language for the 9640 to an enthusiastic audience at the Washington, DC EXPO, held Sept. 16.

The language, now officially known as MY-BASIC, has been available in various versions for beta testing since last spring, and is a minor bug or two away from formal release. The latest version, as of Oct. 1, is V2.99, and it must be run from either MDOS version 1.14F or later or hard disk MDOS version .95H or later. The latest versions of MDOS are 1.14F and 0.96H. Unless you have memory expansion, you must not have TIMODE set in your AUTOEXEC, or there will not be enough available memory. Similarly, keep any supporting internal RAMdisk under 100k.

The most recent versions of the above software are readily available on the major information services, on many local bulletin boards, and from many user groups. Or, the software may be obtained from Myarc at 205-854-5843. Expect to pay a small fee for the service. Myarc will be mailing the software to registered Geneve owners when the final versions are ready.

The purpose of this article is to report the new features of MY-BASIC, concentrating on the differences from the published documentation.

There are a number of new commands not found in the documentation and some differences in the way commands work. In particular, the mouse support is different from what is described in the documentation. While this article will not be able to cover every minor change, it should be complete enough to let you program in the new language with a minimum of experimentation.

FULL-FEATURED BASIC

MY-BASIC takes good advantage of the 9640 and MDOS colors, graphics, speed and mouse support. It is a full-featured BASIC, comparable with the best BASICs available for other computers. Phillips also is promising a BASIC compiler comparable in many ways to Microsoft's QUICKBASIC. He said the new compiler would include advanced debugging features with a split screen, where lines of code could be written in one window and tested in another. Generating the new compiler will take much less time than the creation of MY-BASIC, since MY-BASIC is coded directly in assembly language from the beginning.

MY-BASIC takes good advantage of the 9640 and MDOS colors, graphics, speed and mouse support. It is a full-featured BASIC, comparable with the best BASICs available for other computers.

MY-BASIC will run nearly all TI Extended BASIC programs without modification, except for those with assembly language calls. Since the graphics mode that most XBASIC programs run in is only one of the modes available to MY-BASIC, it is a good idea to add a CALL GRAPHICS(1) statement at the beginning of XBASIC programs to ensure that the mode matches. If you do not want to change the XBASIC program, this can be done separately before running the program.

Several new commands have been added to aid in color handling. The first one to understand is the CALL PALETTE command. It takes the form CALL PALETTE(#color,redvalue,bluevalue,greenvalue) and can add additional colors in the same statement. It mixes a new color palette for one or more colors in the 16-color sets (graphics modes 2,3 and 3,2) and the 4-color set (3,3). It does not work in the 256 color mode (2,2). The range for each color value is from 1 to 8. To reset the original value, use CALL RESETPLT.

CALL TCOLOR(foregroundcolor,backgroundcolor) sets the colors of text. In bit map modes, the color set for a given portion of text remains even when subsequent text is reset. In text modes, when colors are reset, all text is reset at the same time. Color numbers range from 1 to the number of colors available to the mode (4, 16, or 256).

CALL ECOLOR(colornumber) resets the edge color.

CALL COLOR uses 0-15 color range, rather than 1-16 range, in 16-color modes. In the 256 color mode (2,2), the colors are 0-255. In the 4 color mode (3,2), the colors are 0-3. CALL COLOR(#0,foregroundcolor) sets the MOUSE color.

CALL MYART(filename) allows you to load and display a MY-Art picture. This is an excellent way to add complex backgrounds to programs without laboriously creating them with pixels and characters. The program must be set in the right graphics mode for the particular picture before loading.

CALL MARGINS is the correct call for setting up windows. The manual incorrectly lists it as CALL MARGIN.

CALL CIRCLE works as in Myarc's XBASIC II. CALL CIRCLE(line-type,pixelrow,pixelcol,radius,...) is the correct format.

CALL GPOINT(pxlrow,pxlcol,colorvariable) returns the color of a pixel at the point addressed.

The following two demonstration programs show the use of many of the graphics and colors commands.

```
1 !Listing 1
10 ! Demonstration of changi
ng text colors with TCOLOR
70 TXT$="MYARC"
80 T$="      **PRESS ANY KEY*
*  "
90 L=10 :: R=30 :: T=11 :: B
=17
100 CALL GRAPHICS(2,2)
105 FOR J=1 TO 2
110 FOR F=1 TO 16
120 FOR BK=1 TO 16
130 CALL TCOLOR(F,BK)
140 PRINT TXT$;
```

(See Page 35)

GENEVE 9640—

(Continued from Page 34)

```
150 NEXT BK
160 NEXT F
165 CALL MARGINS(L-1,R+1,T-1
,B+1)
170 CLS
175 CALL MARGINS(L,R,T,B)
180 CALL TCOLOR(2,2)
190 PRINT : : :
210 FOR F=2 TO 16
220 CALL TCOLOR(F,2)
230 PRINT SEG$(T$,F*2,2);
240 NEXT F
250 PRINT : :
255 CALL TCOLOR(2,16)
260 CALL KEY(0,K,S):: IF S=0
 THEN 260
280 CALL GRAPHICS(3,3)
300 L=30 :: R=50 :: T=13 ::
B=19
305 CALL MARGINS(1,80,1,24)
307 T$="      THAT'S ALL FOLK
S!  "
309 TXT$="BASIC"
310 NEXT J
```

```
1 !Listing 2
10 ! Demonstration of the 25
6 color palette in mode 2,3
100 CALL GRAPHICS(2,3)
120 CALL MARGINS(5,36,8,15)
130 FOR B=1 TO 256
140 CALL TCOLOR(2,B)
150 PRINT " ";
160 NEXT B
170 CALL MARGINS(6,35,18,19)
180 CALL TCOLOR(29,251)
190 PRINT " THIS SHOWS ALL 2
56 COLORS IN ";" GRAPHICS MO
DE (2,3)";
200 CALL TCOLOR(2,256)
210 CALL MARGINS(1,40,1,24)
```

MOUSE SUPPORT

The mouse is always character 252 (earlier versions used 255, but it was changed to 252 to allow a MAGNIFYed mouse). It is also always sprite #0 (earlier versions used #1). The mouse shape can be defined by using the new sprite character definition command CALL SCHAR(252,patternstring). The mouse default color is color 16. It can be changed using CALL COLOR (#0,color), however, version .95H of MDOS contains an interrupt bug which immediately resets the color back to the default color. You can alternatively change the mouse color by redefining color 16 with the CALL PALETTE command.

The commands MOUSE ON, MOUSE OFF, MOUSE STOP, CALL MLOC, CALL MREL, and CALL HIDEMOUSE are as documented. CALL MKEYLAST and CALL MOUSE are not used at all.

Others are new or changed as follows:

- ON MOUSE (buttonnr) GOSUB (linenr). The syntax adds the button number.
- CALL MKEY(button1status,button2status,button3status,pxlrow,pxlcol). The variables you use for button#status return 1, 0, or -1, as shown in the manual. The variables you use for pxlrow and pxl col return the mouse's position.
- CALL MOUSEDRAG(ON,linecolor)—draws a solid line as you move the mouse. The linecolor is 1-16 or 1-256 or 1-4, depending on the mode used. The left button controls the drag. Mode (3,2) will usually require a redefined PALETTE for effective use.
- CALL MOUSEDRAG(OFF) works as shown in this slightly changed format.
- CALL SEEMOUSE(pxlrow,pxlcol, speed). Speed ranges from 1 to 8.

The program listed below shows the use of several of the mouse commands:

```
1 !Listing 3
100 CALL GRAPHICS(2,2)
110 CALL TCOLOR(2,15)
120 CLS
130 MOUSE ON ! Activates int
errupts
140 CALL SCHAR(252,"36361C3C
7CF81818")! Sets the mouse c
haracter shape
150 CALL DCOLOR(5,1)! Sets t
he color of the rectangle to
 be drawn in 230
160 CALL SEEMOUSE(100,100,3)
! Makes the mouse visible at
 location 100,100
170 DISPLAY AT(2,5):"MOVE ME
 AROUND"
180 FOR N=1 TO 1000 :: NEXT
N ! Delay loop to let you mo
ve the mouse around
190 DISPLAY AT(4,5):"NOW, PR
ESS THE LEFT BUTTON"
200 ! Repeats until you pres
s button 1
210 CALL MOUSEDRAG(ON ,7)! T
urns on the mouse drawing co
mmand
220 CALL MKEY(A,B,C,D,E)! Se
ts up the loop while button
1 is pressed per 260
230 CALL RECTANGLE(1,166,16,
166,92,190,16)
240 DISPLAY AT(22,4)SIZE(8):
"LOCATION"
250 DISPLAY AT(23,4)SIZE(10)
INVERT:D;E ! Displays pixel
values of position
260 IF A=1 THEN 220 ! Loops
as long as button 1 is press
ed, allowing drawng
270 PRINT "DONE"
280 END
```

OTHER CHANGES

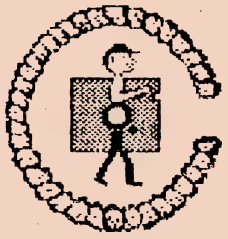
CALL FILES has several changes not specified in the documentation. CALL FILES by itself will catalog from the default drive and path, normally where MY-BASIC was loaded from. The default drive and path can be reset with the CHDIR command. If you are in doubt, check the default with PWD. CALL FILES(number) will catalog that number floppy drive. If you specify a particular hard drive path, it will do the directory for that path. Do not try to use CALL FILES from a window less than 28 characters wide.

Double precision arithmetic and its associated commands and functions have not been implemented. The high degree of precision inherent in the system is adequate for most purposes.

SPEED, COM, MDM, PCM, and PMD are not used at all.

There are additional changes that you will need to know about if you are doing large scale programming or plan on using assembly calls extensively. These will all be made available when the major mailing is made. In the interim period, the changes are kept up to date on CompuServe, GENIE, and Delphi or may be obtained from Myarc.

★ FOR A GOOD TIME ★
★ ATTEND A TI FAIR ★
(For a list of upcoming fairs, see Page 46)



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Chainlink

Chainlink is one of the most challenging and highly addictive of all solitaire card games. While a high solution rate is possible if played very well, Chainlink never ceases to present a challenge to the experienced player. About half of all games can be won, but for the beginner it may take many attempts before the first solution.

Once Chainlink deals the cards out, the entire deck is visible. There are no face down or hidden cards. Because all cards are visible, no luck is involved once the cards are dealt. The outcome depends entirely on your playing skill.

As with most solitaire games, the object of the game is to build all the cards in order from ace to king in each suit. Cards are played one at a time beginning with the aces in four piles at the top of the screen, one for each suit. When all 13 cards in each suit are played to the four top piles, you've won the game!

In the August 1989 MICROpendium Chainlink received an "A." Reviewer Ruth O'Neil called Chainlink "immensely satisfying" and wrote "Obviously, it would be possible to play... with an ordinary deck of cards, but it is much more fun to use this program.

Written in 100% assembly language Chainlink features animated moving cards, sound effects, and blinding speed. According to MICROpendium "The excellent graphics and pleasant sounds... add to the game's enjoyment."

So you can hone your Chainlink skills, 50 saved games that are guaranteed possible to win are included. The manual not only describes how to play Chainlink, but also offers many hints on how to win from the game's creator, Walt Howe.

Chainlink was written by Wayne Stith based on a game by Walt Howe. Chainlink runs on a TI-99/4A or 9640 and requires either Editor/Assembler, TI-Writer, or Extended BASIC. Chainlink sells for $12.

JP Software™

Formerly Genial Computerware

AV-Index

AV-Index allows you to easily create high quality video cassettes labels, audio cassette labels, and audio cassette box inserts with space for listing song titles and other notes. Labels created with AV-Index can be edited, printed, or saved for later use.

A carefully designed user interface makes entering labels as natural as possible. The label is displayed on screen exactly as it will print out on paper - there's no guess work involved! AV-Index is menu driven so there are no commands to memorize. A disk catalog is always available so you don't have to guess at file names.

AV-Index features a smooth scrolling 80 column editor on the 99/4A providing an environment of unparalleled convenience for creating your labels. On a 9640, AV-Index operates in 80 column mode.

While the primary function of AV-Index is to assist you in the creation and maintenance of audio and video cassette labels, AV-Index also includes a library feature which automatically builds an index of audio or video cassettes. The index can be alphabetized, printed, or viewed on screen. There is even room for comments about each audio or video cassette.

Files are stored in a convenient Display/Variable 80 format so you easily access your files with TI-Writer or MY-Word. For those now using Asgard's Cassette Labeler, AV-Index automatically loads and converts files existing files.

AV-Index comes with extensive documentation and several sample labels on disk. As a bonus, portions of the program's assembly code are supplied on disk including QuickSort and 9640 color palette management code.

AV-Index was created by Don and Aaron West. It requires a TI-99/4A or 9640 with at least one floppy drive, Epson compatible dot-matrix printer, and Extended BASIC. AV-Index sells for $15.

JP Software
2390 El Camino Real, #107
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SARGON I

Real competition for chess players

By JOHN KOLOEN

I enjoy chess, whether playing a human — the preferred opponent — or against the computer. The advantage to playing a computer is that there usually isn't a lot of kibitzing that goes on and you can take your moves back without a confrontation. The disadvantage is that to get a really good game out of a computer may require you to commit an entire weekend to the match.

That's not necessarily the case with Sargon I, a fairware offering by Mike Swiridenko. Sargon was the brainchild of Dan and Kathe Spracklen who created the program in 1978. At that time, it was the best computer chess program available, and has since been revised several times for the PC. The version here is a translation of the Z-80 version. It is written in assembly language.

Performance: Sargon I looks good on a black and white or color monitor. The playing screen displays a chessboard on the right side, with black pieces at the top of the screen and white at the bottom. To the left moves are recorded in chess notation. There is enough room to list 20 moves at a time, after which the listing is cleared for subsequent moves.

Sargon offers six levels of difficulty, based on the number of moves the program will look ahead. At level 1, Sargon will look only at the current move; at level 2 it will consider its moves as well as all possible replies the opponent might make. At level 6, it looks far enough ahead that finishing a game may well be impossible. This is because of the enormous number of possibilities at this level, which require an enormous number of calculations to consider. It was not unusual for Sargon to spend hours on a single move at level 6.

However, Sargon plays a reasonably good game even at level 2. Sargon takes only a few minutes to calculate moves at this level. Toward the end of the game it may well be making its moves faster than you.

Predictably, at level 1, the program is easy for an experienced player to defeat. However, at level 2, it plays a relatively good game. Many human players look only to the next move when playing chess and for them Sargon will probably prove to be a challenging opponent.

At level 3, It doesn't make silly mistakes, and it doesn't waste a lot of time protecting bad positions or pawns. It is aggressive even when playing black. Level 3 is probably as high as anyone will take Sargon. Beyond that, you'll need a sundial for a chess clock.

Of course, Sargon allows castling and capturing by en passant. And, it is impossible to enter an illegal move.

In addition to playing the computer, Sargon can be used to analyze moves.

What Sargon can't do is save games for continuation at a later date or output its game notation to a printer. The only way to continue a game is to keep track of moves and then, using the analysis function, recreate the board as you last played it and continue the game. I found this to be a rather tedious process that wasn't as easy to do as the documentation implied.

Review

Report Card

Performance	**A**
Ease of Use	**B+**
Documentation	**B**
Value	**A**
Final Grade	**A**

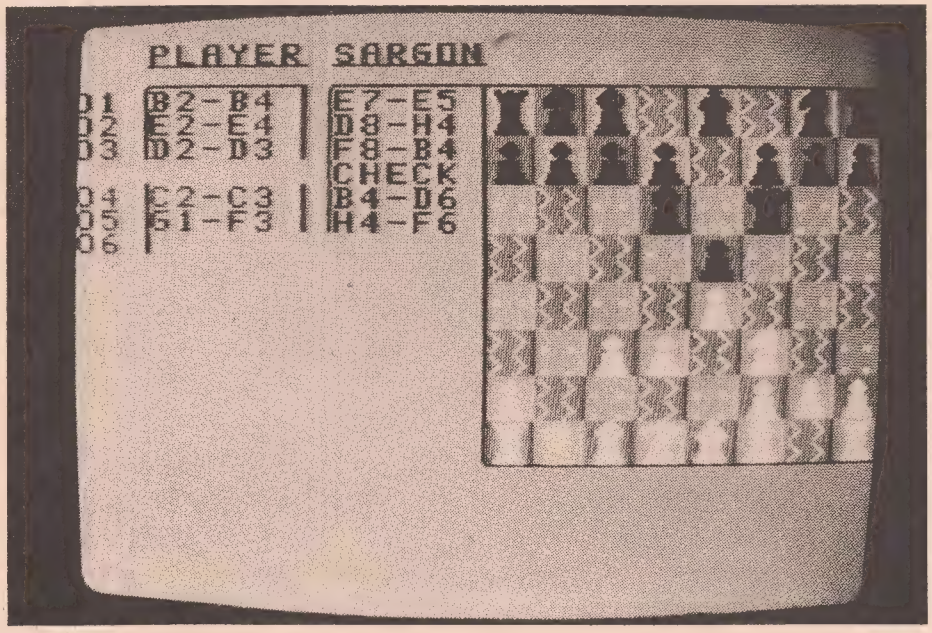
Distributor: Tex-Comp, P.O. Box 33084, Granada Hills, CA 91344
Cost: $4.95
Requirements: memory expansion, disk system, Extended BASIC or Editor/Assembler

Ease of Use: Sargon is easy to use. It uses standard chess notation to represent the movement of pieces and is crash-proof (at least I couldn't make it crash). It is easily loaded using Extended BASIC or Editor/Assembler.

Documentation: The manual consists of five pages in a D/V80 file. A printer is required to obtain a copy of the documentation. It can also be accessed using TI-Writer or a D/V80 file reader.

The documentation provides a brief history of the Sargon program and a step-by-step description of how to play the game. Even a non-chess player should have little trouble figuring out how to use the program.

Value: This program is an outstanding value, notwithstanding the fact that it is in the public domain. It definitely plays a better game than TI-Chess. All it needs is a means of saving games and a way to output the listing of moves to a printer and you couldn't ask for more. As it is, it is still a terrific bargain.



MICRO-REVIEWS

TIW graphics support, fonts and music

By HARRY BRASHEAR

Ratings of products reviewed in this column are based on a star system as follows:

★ Leave it alone, back to the drawing board.

★★ Needs improvement, but workable.

★★★ A good program, worth trying.

★★★★ Send your money and buy it.

★★★

TWG (TI-Writer Graphics)

Here's another interesting program from our friends in Northern Canada.

TWG creates logos, etc. that can be used by TI-Writer for letterheads. This can also be done by some other programs, such as 1000 Words, but there is one major difference. The other programs mostly use a pre-defined Artist Instance and convert it to Writer format. TWG is a mini-drawing program that lets you create the letterhead in it's own environment, then it dumps it to TI-Writer format.

For those who are more text than graphics oriented, this could be a valuable program. I can't conceive of a reason why someone would be without TI-Artist, but if you don't own it, at least now you can spruce up those letters with this program.

TWG is easy to use. It presents you with a box 5 characters high by 30 characters wide at the top of the screen. Below it is a scrolling zoom box, similar to the Picasso zoom mode. Whatever you do above is duplicated below, or vice-versa. The cursor is a pencil that you can move via keys or joystick and it has both single pixel and eight pixel width options. Pressing "H" brings up a Help screen so you shouldn't have any trouble with the many options this program allows.

When you're finished with your logo creation, you can save it to a pre-trans literated TI-Writer file, print it, or, save it as a reloadable file to TWG. Using the logo from a Writer file is simply a matter of using the .IF command ahead of your text.

I found that the program was just a tad cumbersome because you have no ability to just move about, without pressing "U." However, the printout from the Writer was most acceptable so this is an easily forgivable oversight.

I know there are a lot of people out there who use this type of program because I see the results on letters I receive. Since it is a very important utility, I don't think you can let this go by without trying it out. It does require an Option three (EA/3) load so you have to have the Editor/Assembler cartridge or equivalent to use it.

Send $10 to Sylvain Mornard; 8351 Neuville, No. 19; Anjou, Quebec Canada, H1J 1Y3.

(See Page 40)

ATTENTION: GENEVE USERS

THIS IS NOT YOUR LITTLE BROTHER'S TPA. THIS IS A FULL WYSIWYG VERSION FOR YOU.

(TPA is The Printer's Apprentice)

(Copyright 1989, Mike McCann)

Clipart

TPA uses fonts from the TPA system for the 99/4A. TPA also uses fonts, instances and "_P" pictures from the popular TI-Artist by Inscebot.

Draw

TPA has a wide range of drawing tools: lines, magnify, boxes, curves, fill, triangles and cut & paste.

Print

TPA will print to 100% Epson compatible graphics printers or Gemini 10X.

Text

TPA font text is simple. Type or load your text. Drag open a graphics box. Press Enter. The box fills with text in your choice of font, format, line spacing and font size.

To order TPA send Check or money order for $22.50 to:

McCann Software
P.O. Box 34160
Omaha, NE 68134

MICRO-REVIEWS—

(Continued from Page 39)

★★★★ PAGEPRO FONTS

Wow, here's just what the doctor ordered for the hot property called PagePro from Asgard Software.

Although you are given a converter for Artist fonts along with the PP program, a lot of people were having trouble with conversions. The problem is that the formats in PP just don't line up with that many of the Artist collection. As this became more apparent, Paul Scheidemantle was commissioned to some custom work specifically for PP. The end result was 50 brand new fonts on 2 disks, 16 large and 9 small ones on each. Par for the course with Paul, these are magnificent works of art. Take a look at a few of them below and you can see what I mean.

BLOCK1_SM

ABCDEFGHIJ
abcdefghij
0123456789
!@#$%^&*()

BRDWY_LG

ABCDE
01234

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PagePro is a super program, and these fonts will really make your graphics and text outstanding.

The cost is $7.95 per disk, but I wouldn't bother messing around. Get them both for $14.95 and you'll be set for life. Asgard Software; P.O. Box 10306; Rockville, MD, 20850.

★★★ MUSIC: PHANTOM OF THE OPERA

I'm going to editorialize a little with this review folks ... just letting you know ahead of time.

A young man, 15-year-old Andy Frueh, sent me this music program recently, along with a letter of explanation. It seems that the aforementioned disk was released at the Lima fair this year. Not wanting to stick anyone with something they didn't really like, 15 of them were sold for 25 cents each. To date, only one donation has been received. If you don't like music, why the heck did you buy it? Nuff said!

I'm not one for classical music, (doesn't anyone in this universe know any classic pop, like Gigolo, or maybe a Beach Boys tune) and I've already stated as such, but this, again, is very well done. It's an 87-sector program, so you can also expect a lot of music for your money.

As if all that hard work isn't enough, (and I believe that any music is one of the toughest things to program) Andy has also included one of the best tutorials I have ever seen on music programing. That in itself would be worth the $5 or so that he's asking for this disk.

Come on folks, give the fella a break, and let him go on to even bigger and better stuff.

Send $5-$10 to Andy Frueh; 638 Maplewood Dr.; Lima, OH, 45805.

★★★★ USER GROUP HARDWARE REPRINTS

This project from the Chicago Users Group gets my vote for deal of the year. I'll even tell you the price first: $10.

This book is the project of Nick Tacovelli of the Chicago group. Simply, it is a compilation of darn near every hardware article that has appeared in the last three years in group newsletters.

Here's a sampling of the titles:

Cleaning Your 99/4A
RGB Converter
Build Your Own Dual Cassette Cable
Trackball For The TI
Home Control
Do It Yourself Module Port Expander
Adding to Your SuperCart
XBasic Inside the Console
Installing IBM DSDD Drives
Power Supply Fix
Surge Protection
Wiring a Printer

There are 150 8½ x 11 pages of hardware information bound with a single staple. It's not a super typesetting job, but the reproduction is very good and I didn't find any part of it that couldn't be read.

I don't care who you are, or whether you like to get into hardware or not. Sooner or later, you're going to need some information that's in this manual. Sure, there are some projects that are way over my head — basic chicken actually — but when you're an orphan and have to make your own interface cables, it's nice to know where to find the pinouts.

If you're planning on hanging on to your TI, (and who isn't) buy it!

Send $10 to: Chicago TI User Group; Attn. Chuck Levitt; P.O. Box 5788341; Chicago IL 60657.

THANK YOU

To finish up this month, I want to say "thank you" for something.

I received a letter from Harrison Software concerning the review of their music programs. It was to thank me for what I said and to tell me that they have had a rush of orders because of the review. This software deserved what I said about it. But more importantly, I am pleased that you folks are reading these reviews. That's what I want to thank you for, believing in me. Your humble TI servant ... HTB.

If you would like me to review your software in this column, send it to the address below. If you would like it returned, include a SASE. Write to: Harry T. Brashear; 2753 Main St.; Newfane, NY 14108.

Newsbytes

Comparison Shopper information corrected

Shirley Slicer has written to correct incorrect information about her TI Comparison Shopper published in MICRO-Reviews (August 1989 MICROpendium).

She writes that the TI Comparison Shopper is fairware; it is 395 sectors long; $5 is the requested donation.

A copy may be obtained by downloading it from GEnie or other BBS or copying it from a friend or user group, then sending the requested dontation, or directly from Slicer by sending the requested donation plus blank initialized disk(s), a disk mailer and return postage. For an additional $3 ($8 total) she will provide the disks, mailer and postage.

Write Slicer at 1101 Purdom St., Olathe, KS 66061.

Starfleet series gets new additions

Texaments has released Starfleet Technical Drawings II, the second addition to the Starfleet Technical Drawings series, and has launched a user group discount program.

The drawings are pictures of various spacecraft that have appeared in the original Start Trek television series, the new syndicated Star Trek: The Next Generation television series and the five Star Trek motion pictures, including both United Federation of Planets and Romulan spacecraft, as well as a drawing of the Ferengi starship. Each drawing can be viewed, altered and printed using TI Artist or TI Artist PLUS!

Each disk of the Starfleet Technical Drawings includes a small command file that allows the drawing to be viewed in a slide show format using Display Master (sold separately).

Starfleet Technical Drawings II, a three-disk package, is available for $9.95. For a limited time, both Starfleet Technical Drawings I and II may be purchased together for $17.90 and with Display Master for only $29.90. A $2.50 shipping charge applies to all orders.

For information or to order, contact Texaments at 53 Center St., Patchogue, NY 11772 or (516) 475-3480 (voice) or (516) 475-6463 (BBS).

Texaments invites all active user groups to participate in its discount program, according to Steve Lamberti, Texaments president. To register for the program, one member from each group must submit the following information in writing:

- User group name
- Group mailing address
- Telephone number
- BBS telephone number, if any
- Number of members in group
- List of current group officers

On Texaments' receipt of the registration information, Lamberti says, each group will be sent rules of the discount program, current product literature and press releases and any special discount offers. He says several times during the year registered groups will be sent new product information and offers. Groups may write the User Group Discount Program at the address above.

Canadian TI-FEST set for April 18 in Ontario

The 1990 Canadian TI-FEST is scheduled for April 28 at Merivale High School in Nepean, Ontario (near Ottawa), according to Ruth O'Neill, coordinator for the event.

For information, contact her at 34 McLeod St., Ottawa, Ontario, Canada K2P 0Z5 or (613) 234-8050, or CompuServe 72117,3541 or Delphi REON.

New documentation for prototyping board

The TI Peripheral Expansion Box prototyping board designed by Scott Coleman and John Willforth is scheduled to be available at the Chicago TI-Faire Nov. 4 with more detailed documentation and more schematics, according to Coleman. The price is $35, with quantity discounts available.

Coleman says he encourages proto board owners to send schematics and instructions for hardware projects to him at RD1, Box 205, Greensburg, PA 15601. He says a free proto board will be sent to authors of projects selected for inclusion in future documentation.

Proto boards may be ordered from Bud Mills Services, (419) 385-5946, or L.L. Conner Enterprises, (317) 742-8146.

Peripheral manual published for 99/4A

The *Interface Standard and Design Guide for TI99/4A Peripherals* by Tony Lewis and others is available, along with programs on disk, from Lewis and selected distributors.

The intermediate-level manual, more than 100 pages long, covers topics including basic peripheral electronic features, definition of all peripheral spaces, dimensions for P-Box cards, definition of all peripheral spaces, Device Service Routine architecture and completely disassembled and commented routines used by the console to access peripherals.

The disk contains utility programs to assist in creating DSRs. Programs include disassemblers for the 9900 and GPL, a debugger and a DSR save and load program. The manual is available for $21.95 with a DS/SD diskette or for $22.95 with to SS/SD diskettes (price includes shipping). Discounts are available to user groups.

For information or to order, write Tony Lewis, 409 Drolmond, Raleigh, NC 27615.

Programmers, distributors sought

Comprodine is seeking programmers and distributors, according to a news release from the company.

Individuals interested in programming and user groups interested in becoming distributors should send a self-addressed, stamped envelope to Comprodine, 633 Hollyburne Lane, Thousand Oaks, CA 91360. For software ordering information, send SASE to Comprodine, 1949 Evergreen Ave., Fullerton, CA 92635.

Plink changes rates

American People/Link has returned to a flat hourly rate within the continental United States as of Oct. 1, but has increased its basic Telenet rates.

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Newsbytes

(Continued from Page 41)

Plink has entered into an agreement with ATI to utilize its RediAccess Packet Switch Network service. All modems on the RediAccess network are 300/1200/3500 baud, meaning that users wil no longer need separate numbers for 1200 and 2400 baud access.

In addition, Plink has lowered the PartyClub rates to $75 per month for unlimited use during non-prime time hours, or $50 per month for users calling the local Chicago number or using a Telenet PC Pursuit account.

Non-prime time hours are 6:01 p.m. to 7 a.m. Monday through Friday and all day Saturday and Sunday, local time. Hourly rates direct dial into the Chicago node or via Telenet with PC Pursuit or Tymnet with Starlink are $3.50 per hour 24 hours.

Non-prime time rates via REDI-Access are $4.95/hour, 300 baud; $5.95/hour, 1200 baud; and $9.95/hour, 2400 baud. Via Telenet, they are $6.95/hour, 300 baud; $7.95/hour, 1200 baud; and $13.95/hour, 2400 baud. Prime time rates at all three speeds are $17.95/hour, REDI-Access, and $19.95/hour, Telenet.

Number for the Chicago node is (312) 715-1042. The rates were announced by Elizabeth McGinnis, Plink president. Chairman of the TI99/4A and Geneve 9640 section on Plink is Tom Wills.

Gilliland gets award

McCann Software has presented its 1989 Pagemanship Award to Ken Gilliland of the San Fernando Valley User Group. The award was given for his "Ken's Korner" column in the group's newsletter, which included a five-part series on how to use McCann's program, The Printer's Apprentice, for the TI99/4A, company president Mike McCann says.

The prize given for the award was a copy of The Printer's Apprentice (MDOS version) for the Geneve 9640.

Address for McCann Software is P.O. Box 34160, Omaha, NE 68134.

New manual due from users' group

The *TI-Writer Supplement Manual* is scheduled for publication Nov. 1 by the Chicago Users' Group.

The manual is a compilation of articles and programs related to TI-Writer. Also scheduled for release is a disk containing all the programs in the manual with others not contained in it, according to Don Jones of the users' group.

The manual and disk will be available by mail as well as at the Chicago TI-Faire Nov. 4. The manual alone sells for $5, the disk alone for $5 and a package containing both the disk and the manual for $7. An additional $2 postage and handling charge should be included for the manual if ordered by mail; there is no additional postage charge for the disk whether ordered alone or with the manual.

For information or to order, write the Chicago TI99/4A Users' Group Inc., P.O. Box 578341, Chicago, IL 60657.

Genial becomes JP

The former Genial Computerware of Massachusetts is now operating out of California with a new name.

Products from the company are now available from JP Software, 2390 El Camino Real, #107, Palo Alto, CA 94306.

Genial Computerware of Pennsylvania, whose product is a "magazine on disk" for the TI, continues to operate at 835 Green Valley Dr., Philadelphia, PA 19128.

***Newsbytes* is a column of general information about produces and services relating to TI users. The publisher does not necessarily endorse products listed in this column. Send items to: MICROpendium Newsbytes; P.O. Box 1343, Round Rock, TX 78680.**

User Notes

Five-line limit in Extended BASIC

This comes from Tom Freeman of the Los Angeles TI User Group. He writes:

James Aaron posed the question last month if it was possible to defeat the fifth line cursor block in Extended BASIC. I took this as a challenge and started fooling around with Explorer again, and re-read parts of the well-worn manual. With a little creative guessing I came up with the following:

The code at grom address 6A8E is BF 5E 03 7D, which translates to double store >037D at >835E. This operation is performed each time an input line is allowed. I tried adding >20 to it, and each time I did so, an extra input line was allowed.

I do not know whether this will interfere with any other code in the module, or running programs but in brief tests there was no problem. Replacing the 7D with FD will allow for nine lines! If you are sector editing the files directly, the location should be at byte >97 of the 11th sector of the last of the XB files. Note that FCTN 8 (REDO) still brings up only five lines, but editing gets them all, and each time you edit, if you type to the end of the line, an additional line will be allowed. By doing this repeatedly I managed to fill the entire screen with one program line, without any tricks such as typing control keys after a REM.

In fooling around with this a bit, I found that entering from an empty line, either in NUMber mode or from the command line, the extra screen lines are allowed. However, if you edit an existing line, you will still bump up against the five-line limit. But, as before, you can then edit that line and you will get the extra lines if the last character on the fifth line was used.

The easiest way to make sure this happens is to type the :: (multiple statement separator) without spaces before and after it. When you edit the line XB introduces spaces and you will then spill over to the sixth line and then the only limit is the 161 total for the tokenized line.

CorComp controller and CHARA1FIX

CHARA1FIX can be easily modified to work with CorComp disk controllers, according to Lee Thompson. He writes:

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User Notes

(Continued from Page 42)

I recently typed up and compiled the CHARA1FIX program by Wayne Stith which appeared in your June, July and August issues. I ran into a problem caused by the fact that I have a CorComp disk controller. The disk controller by CorComp requires that the lines which appear near the end of the PASS3 section (right-hand column, page 33, June issue) just before the comment regarding Subroutine >14 be modified to read the file from the disk. The line:

```
JEQ     PASSX
```

should be replaced by:

```
MOVB  @>8350,R0
JNE     PASSX
```

This change will make the program compatible with CorComp disk controllers.

Typos in CHARA1FIX

Tom Wilmot, of Winona, Minnesota, reports two changes he made to the CHARA1FIX program before he could get it to work. We pass it on here, though the version published worked fine for us.

After the label PASS3 on page 33 of the June issue, I had to change the two occurrences of:

```
LI      R0,>3500
```

to:

```
LI      R0,>3509
```

Something to try when XB locks up

This comes from James Murta of Glendale, California. He writes:

Concerning the feedback item (Sept. 1989) about Extended BASIC cartridge lock-up described by Frank Hreha: He may be able to eliminate his problem by moving the Extended BASIC cartridge to the slot in the Navarone Widget furthest from the computer and closest to the person operating the computer. The lock-up occurs, I believe, when the Extended BASIC cartridge is sandwiched between two other cartridges in the Navarone three-module expander.

Using your TI with a VCR

This comes from Charles Good of the Lima Ohio User Group. He writes:

I have long known that it was possible to output from the 99/4A to a VCR. What I didn't realize was that this can be done easily, without a video camera, using off-the-shelf cables instead of custom-soldering my own homemade cables. I also didn't realize until recently how easy it is to add a spoken commentary to a videotape of computer output using nothing more than an ordinary cassette tape recorder.

The main equipment you need to output directly to a videotape, besides a VCR and a 99/4A console, is a monitor cable. This is the cable normally used to connect the console to a composite color monitor such as the 10-inch monitor TI used to sell. This is TI part number PHA2010, and is available for $15 from L.L. Conner Enterprises (317-742-8146), Tex-Comp and probably any other dealer that sells TI hardware.

Hook one end of this cable to the console where the RF modulator (TV adapter) normally attaches. Hook the other ends of the cable to the Video In and Audio In female phono jacks in the back of the VCR. Attach a TV in the usual way to the VHF Out antenna jack in the back of the VCR and you are ready to go! You can hear the audio and view the video output of the computer on the TV and at the same time optionally record the output onto videotape.

To allow for a spoken commentary you need a cassette tape recorder and some cable from Radio Shack. You can't use small tape recorders that mute the earphone jack when you press record.

You will need to purchase a small "Y" shielded phono cable with two female and one male end (Radio Shack Part No. 42-2436) and plug it into the Audio In jack in the back of the VCR. Plug the audio part of the monitor cable into one branch of the Y cable.

Connect a shielded cable between the other side of this Y to the speaker or earphone jack of the tape recorder. Small tape recorder earphone jacks, such as that on the TI Program Recorder, require a miniature phono plug. The appropriate Radio Shack cable (Part No. 42-2444) is six feet long and has a miniature phono plug at one end and a small "regular" phono plug at the other. If you can't find this particular cable for the cassette recorder- VCR link, you can use Radio Shack cables with stripped ends, a three-foot phono cable (Part No. 42-2370) and a three-foot miniature phono cable (Part No. 42-2434). Just twist and tape the ends together.

Using this setup, push Record on the cassette recorder to record a spoken commentary onto the videotape. This allows the built-in tape recorder microphone to pick up your voice and send it to the VCR via the earphone jack. If you wish, you may use an external microphone attached to the tape recorder's microphone jack.

With most recorders, you can only push Record if there is a cassette tape in the recorder. If you don't want to use the cassette recorder with a tape inside, you can usually reach inside the tape compartment and push the pin that is normally pushed by the write protect tab on a cassette tape. Pushing this pin will allow you to push Record and activate the microphone. To turn off the microphone, push cassette Stop.

Now you can make VCR recordings that include the video and audio output of the computer, and a person's voice. All this is done without a video camera!

TetrIs character changes are noted

This comes from Henry E. Koehne, of San Diego, California. He writes:

The TetrIs game (Sept. 1989) has proven to be a very entertaining program, once the bugs were picked out. Here are two errors found in the DATA section on page 40:

Line 560, next to last item "0F0FF0F0FFFFFFFF" should be "0F0F0F0FFFFFFFFF" to form an inverted "T" as character 96.

Line 590, last item "F0F0F0FE" should be changed to "F0F0F0F0" to avoid leaving a tail on character 143.

Tiny Tutor

This comes from Edward Machonis of Floral Park, New York. He writes:

This two-line program will help the lit-

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User Notes

(Continued from Page 43)

tle tots learn the names of the letters and numbers and find them on the keyboard. A speech synthesizer is recommended, although the program will run without one. Randomly generated numbers and letters are displayed double-sized on the screen and named. If the user presses the corresponding key a new character is displayed. The program also may be used for typing practice.

```
1Ø RANDOMIZE :: CALL CLEAR :
: CALL SCREEN(5):: J=INT(RND
*43)+48 :: IF J>57 AND J<65
OR J=K THEN 1Ø ELSE K=J :: A
$=CHR$(K):: CALL MAGNIFY(2):
: CALL SPRITE(#1,K,16,85,12Ø
):: CALL SAY(A$)
2Ø CALL KEY(3,X,S):: IF S<1
OR X<>K THEN 2Ø ELSE CALL SO
UND(1ØØ,44Ø,2):: GOTO 1Ø !
TINY TUTOR BY ED MACHONIS
```

Cut the cards

This comes from Harold 'Pete' Sarasin, of Goleta, California. He writes:

I read with interest the article "Cut the cards" under User Notes in the May 1989 issue. I am submitted the algorithm I use to deal cards. Two improvements are: No slowdown when dealing end of deck, and virtually instantaneous reshuffle. Only one variable has to be reset to reshuffle the deck.

Line 550 selects a random number from one to the number of cards left in the deck.

Lines 560-580 swap array elements, corresponding to the random number, with the top card of the deck.

Line 590 decrements the deck by one, thereby making the cards already selected unavailable for further selection.

Lines 600 and 610 determine the card suit and card rank.

Lines 630 and 640 display card graphics. The deck is reshuffled by restoring the number of cards available to 52 (line 360). The number of cards to be dealt can be changed in line 410.

This program can be run in both BASIC and Extended BASIC. If running in XBASIC, remove the REMs in lines 460, 500 and 620. Cards will then be dealt face down by placing a stationary sprite before doing card graphics. Cards may then be "turned over" by doing a DELSPRITE.

When designing your graphics, keep in mind that only four sprites may be shown on one row.

```
1ØØ CALL CLEAR !2Ø9
11Ø CALL SCREEN(13)!198
12Ø D$="A23456789tJQK" !Ø65
13Ø DIM DK(52)!183
14Ø CALL CHAR(1Ø2,"ØØØ81C3E7
F3EØ81C")!Ø97
15Ø CALL CHAR(1Ø3,"ØØØ81CØ82
A7F2AØ8")!Ø76
16Ø CALL CHAR(1Ø4,"ØØ367F7F7
F3E1CØ8")!114
17Ø CALL CHAR(1Ø5,"ØØØ81C3E7
F3E1CØ8")!1ØØ
18Ø CALL CHAR(116,"ØØ4C52525
252524C")!Ø5Ø
19Ø CALL CHAR(128,"FØFØFØFØF
ØFØFØFØFØ")!148
2ØØ CALL COLOR(1Ø,7,16)!Ø24
21Ø CALL COLOR(11,2,16)!Ø2Ø
22Ø FOR I=2 TO 9 !Ø65
23Ø CALL COLOR(I,2,16)!Ø49
24Ø READ MSG$(I-1)!Ø2Ø
25Ø NEXT I !223
26Ø FOR I=1 TO 52 !111
27Ø DK(I)=I !Ø76
28Ø NEXT I !223
29Ø DATA "PRESS 1 DEAL ANOTH
ER SET","       2 RESHUFFLE A
ND DEAL","       3 END","OUT
OF CARDS","STARTING OVER","
                ","","" !
182
3ØØ Y=1 !Ø17
31Ø FOR J=J+1 TO J+3 !Ø81
32Ø M$=MSG$(J)!241
33Ø GOSUB 66Ø !23Ø
34Ø Y=Y+2 !Ø44
35Ø NEXT J !224
36Ø D=52 !Ø51
37Ø CALL HCHAR(2Ø,1,32,16Ø)!
Ø13
38Ø H=6 !ØØ5
39Ø V=4 !Ø17
4ØØ CALL VCHAR(2,4,32,23)!18
6
41Ø FOR L=1 TO 5 !Ø63
42Ø GOSUB 54Ø !11Ø
43Ø IF D THEN 48Ø !Ø34
44Ø Y=2Ø !Ø67
45Ø J=3 !ØØ4
46Ø REM CALL DELSPRITE(ALL)
!2Ø4
47Ø GOTO 31Ø !134
48Ø H=H+3 !Ø11
49Ø NEXT L !226
5ØØ REM CALL DELSPRITE(ALL)
!2Ø4
51Ø CALL KEY(Ø,K,ST)!Ø15
52Ø IF (K<49)+(K>51)THEN 51Ø
 !Ø19
53Ø ON K-48 GOTO 38Ø,36Ø,71Ø
 !211
54Ø RANDOMIZE !149
55Ø C=INT(RND*D+1)!214
56Ø X=DK(C)!Ø85
57Ø DK(C)=DK(D)!Ø61
58Ø DK(D)=X !Ø86
59Ø D=D-1 !ØØ2
6ØØ SU=INT((X-1)/13)!Ø21
61Ø X=X-(SU*13)!Ø54
62Ø REM CALL SPRITE(#L,128,7
,H*8-7,V*8-7):: CALL MAGNIFY
(2) !151
63Ø CALL HCHAR(H,V,ASC(SEG$(
D$,X,1)))!239
64Ø CALL HCHAR(H+1,V,SU+1Ø2)
!195
65Ø RETURN !136
66Ø FOR I=1 TO LEN(M$)!241
67Ø M=ASC(SEG$(M$,I,1))!179
68Ø CALL HCHAR(Y,I+2,M)!Ø78
69Ø NEXT I !223
7ØØ RETURN !136
71Ø END !139
```

MY-BASIC error codes

This comes from Jim Uzzell, Austin, Texas. He writes:

The following are error messages and their codes added to MY-BASIC, in addition to those used by Extended BASIC.

CODE	ERROR MESSAGE
23	Symbol not found
63	String format error
64	Error BASIC OS
65	Mouse mode error
99	Invalid error number
101	Integer overflow
102	Invalid filename
103	Argument not numeric
104	Missing argument
105	Too many arguments
106	String too long
107	Graphics mode error
108	Window too small

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User Notes

(Continued from Page 44)

CODE	ERROR MESSAGE
111	Memory overflow
112	Checksum error
113	Duplicate DEF
114	Illegal tag
115	Unresolved reference
116	Name not in table
118	Index out of range

These messages are added to syntax or bad value error messages if appropriate.
Missing comma
Missing left paren
Missing right paren
Linetype (see draw, rectangle)
Pixel row
Pixel col

And here is a tip on using the FREESPACE command:

FREESPACE: X=FREESPACE(Y) :: PRINT X

Values of Y are:

0=All memory 1=Program space
2=Data space 3=Assembly space
4=Stack space

The above applies to V2.98 of MY-BASIC.

1-line word counter

This comes from John Martin, of Las Vegas, Nevada. He writes:

I happened across a short program written by Jim Peterson of Tigercub Software that counted the words in a D/V80 file. I had been looking for another one-liner project to do, so I decided to try to squeeze a word count program into one line. It was much more difficult than I had anticipated, but I finally managed to get it done. Here is the listing:

```
1 X=N+A :: IF A THEN N=POS(X
$," ",X):: IF N=X THEN 1 ELS
E Z=Z-(X<LEN(X$)):: DISPLAY
AT(9,A):Z;"WORDS": : : :X$:Y
$:Y$ :: IF N>X THEN 1 ELSE I
F EOF(A)THEN END ELSE LINPUT
 #A:X$ :: GOTO 1 ELSE A=1 ::
 DISPLAY ERASE ALL :: INPUT
"FILE? ":F$ :: O
PEN #A:F$,INPUT :: GOTO 1 !J
OHN MARTIN !Ø41
```

Like my previous one-liner (a D/V80 file reader, November 1988 User Notes), this one requires that you type until the computer stops accepting input, press Enter, REDO and cursor back to the end of the line to continue entering the program.

When the computer again stops accepting input (on the next to the last line of the program), press Enter, type 1, FCTN X, and once again cursor to the end of the line. This will allow you to type in the last line of the program.

About half of the word count programs I have seen try to filter out the TI-Writer Formatter commands (.LM, .RM, .FI, .AD, etc.). Obviously, this program doesn't have the space for such things. I am not so sure I would have included them anyway, since it seems to me that one would be better off printing the file through the formatter to disk. That would filter out the formatter commands and the file would be exactly like it will look when printed.

I have tested this program against several other word count programs — some from MICROpendium — and have found it to be reasonably accurate. None of the programs I tested came up with the same counts on the various files I used to test but, on average, mine was very close to them all.

Word scrambler

This appeared in Bug Bytes, the newsletter of the TI Brisbane (Queensland, Australia) User Group.

The following is a short program that can be used to unscramble or decipher the Jumble Puzzles that appear in newspapers. Some of these words, though short, can be hard to figure out and with this little program the chore will be a lot easier.

The program prompts the user for a word to scramble and then displays a list of 10 variations using the letters from the specified word. If the appropriate variation doesn't appear, simply enter "Y" and another 10 variations will appear. Do this as many times as required. Duplicate variations will appear after several repetitions.

```
1Ø CALL CLEAR !2Ø9
2Ø RANDOMIZE !149
3Ø INPUT "WORD TO SCRAMBLE "
:W$ !Ø34
4Ø FOR Y=1 TO 1Ø !121
5Ø FOR I=1 TO LEN(W$)!251
6Ø R=INT(RND*LEN(W$)+1)!Ø94
7Ø IF A(R)THEN 6Ø !Ø57
8Ø A(R)=I !ØØ7
9Ø X$=X$&SEG$(W$,R,1)!224
1ØØ NEXT I !223
11Ø N$(Y)=X$ :: X$="" !245
12Ø PRINT N$(Y);" ";!Ø36
13Ø FOR I=1 TO LEN(W$)!251
14Ø A(I)=Ø :: NEXT I !Ø15
15Ø NEXT Y !239
16Ø INPUT "REPEAT THAT WORD
Y/N ":ANS$ !173
17Ø IF ANS$="Y" THEN 4Ø !Ø1Ø
18Ø STOP !152
```

Subroutine extractor

This routine was written by the late George Steffen. It is used to extract and series of lines from a program for reuse in another program. It requires a memory expansion and Extended BASIC. Instructions are included in the program listing.

```
1 !SUBROUTINE EXTRACTOR by G
eorge F. Steffen. Save in ME
RGE format. MERGE into any p
rogram (with line # starting
 about 8). RUN to extract !Ø
63
2 !selected lines. Deletes i
tself. Then be sure to SAVE
the selected lines in MERGE
format because the remaining
 lines are still in memory!
!2Ø3
3 CALL CLEAR :: CALL INIT ::
 INPUT "Line numbers of rout
ine to be saved: First,Last?
":L,M :: G=256 :: CALL PEEK(
-31952,H,I,J,K)!Ø42
4 C=INT(M/G):: D=M-C*G :: F=
(J-G)*G+K :: FOR E=(H-G)*G+I
 TO F STEP 4 :: CALL PEEK(E,
A,B):: IF A=C AND B=D THEN 6
 !2Ø3
5 NEXT E :: PRINT :"LINE";M;
"NOT FOUND!" :: STOP !@P- !Ø
47
6 H=INT(E/G):: I=E-(G*H):: H
=H+G :: C=INT(L/G):: D=L-C*G
 :: FOR E=E+4 TO F STEP 4 ::
 CALL PEEK(E,A,B):: IF A=C A
ND B=D THEN 8 !@P- !Ø27
7 NEXT E :: PRINT :"LINE";L;
"not found!" :: STOP !@P- !Ø
46
8 E=E+3 :: J=INT(E/G):: K=E-
(G*J):: J=J+G :: CALL LOAD(-
31952,H,I,J,K):: STOP !@P- !
161
```

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A complete listing of programs that have appeared in this column is available from MICROpendium for $2. The listing runs 10 pages.

MISCELLANEOUS EDUCATIONAL SOFTWARE

This is a disk loaded with a variety of programs, ranging from social studies quizzes to math. They are SOLARSYSTM, AMERPRES, ENGMONARCH, GREEKROMAN, WORDLINES, JOYSTICK AMERICA, WORDMATH, GAGGLES, TRIANGLES, FACTORING and MCSTCAPS, all of which run out of BASIC. AUDIOMATH uses a speech synthesizer and TEII. This anthology of programs is called Fairware #1. Order from Don Shorock, P.O. Box 501, Great Bend, KS 67530. Include a SSSD disk and SASM (self-addressed, stamped mailer.) For cassette copies, send a C-10 cassette for each pair of programs requested. Contributions may be sent when ordering or after using the programs.

BBS, NUCLEAR 99ER AND TI-PSYCHIATRIST

These three program are being offered by S.E. Morrow of P.O. Box 1763, CFPO 5056; Belleville, Ontario; Canada K0K 3R0. Include a SSSD disk for each program orders as well as a suitable SASM.

The BBS program is called Razor's Edge and is based on Monty Schmidt's Techie, using Jim Ries' assembly routines. The program supports up to five message areas, 12+ text file areas, the MPB Clock, 300/1200 baud, full online updating and full sysop's remote. Other features are described in the documentation. The cost is $10. Requires memory expansion and disk system.

Nuclear 99er is a simulation/game. The player has control of a nuclear power plant and must operate it as efficiently as possible. Malfunctions and "glitches" creep into the system to make the operator's task a challenge. The cost is $5. Memory expansion and disk system are required.

TI-Psychiatrist is a spruced-up version of the old Eliza program. Cost is $5. Requires memory expansion and disk system.

DATABASE PROGRAM IN PASCAL

Catalog Program, by Ake Jonsson, is written in UCSD-Pascal and is similar to Personal Record Keeping. Source code is included so that users may adjust field lengths, the number of fields, etc. The cost is $10 for users who want the program on 3 SSSD disks, or $8 if double-sided disks are used. The price includes media and airmail postage. The program requires a p-Code card, memory expansion and disk system. Write to Jonsson at N. Bogesundsgatan 1B; S-552 68 Jonkoping; Sweden.

XHi GRAPHICS PACKAGE

This package is by Alexander Hulpke. It provides high-resolution graphics support through Extended BASIC. It requires a TI99/4A with an DIJIT Systems AVPC card or a Mechatronics 80-column card. It also runs on the Geneve 9640. It works through the use of CALL LINKs from Extended BASIC. Graphics may be output to a printer. Hulpke, a math and physics student, will provide a DSSD disk and postage for $4 in U.S. funds or seven Duetsch Marks, or users may provide the disk and postage-paid return mailer. A donation is requested after receiving the program. Write to Hulpke at: Sadowastrasse 68; 5600 Wupertal 1; West Germany.

TETRIS IN ASSEMBLY LANGUAGE

Alexander Hulpke is offering an assembly language version of Tetris, a popular computer game that originated in the Soviet Union. The game requires a memory expansion and disk system. It looks best with a color monitor. The object of the game is to direct falling objects of varying shapes into appropriate "landing" areas. Send $4 in U.S. funds or seven Duetsch Marks and Hulpke will provide the media and postage. Otherwise, send a disk and postage-paid return mailer. A donation is requested after receiving the program. Write to Hulpke at: Sadowastrasse 68; 5600 Wupertal 1; West Germany.

BAGNARESI ASSEMBLER V1.4

This program is by Paolo Bagnaresi, author of BA-Writer and other programs. This program is an improvement over TI-Assembler (ASSM1 and ASSM2). Improvements include: More symbols can be accepted; in case of error, the line number and the "COPY" filename that generated the error is displayed; a new "E" option outputs to an external device only the generated errors, not source or object code as well; the LIST function will print the entire 80 character line of source files to a printer; a new option allows the user to select a range of pages to be output to a LIST device; assembling can be halted by pressing FCTN 4; and specific TMS 9995 machine instructions (LST, LWP, DIVS, MPYS) are assembled. With a TI99/4A, this assembler requires that RAM be present in the address range of >6000—>7FFF, which is satisfied by the use of a Super Space cartridge. Bagnaresi has placed this assembler in the public domain. There is no shareware charge. To obtain a copy from the author, send a SASM and SSSD disk to Paolo Bagnaresi; Via J.F. Kennedy 17; 20097 San Donato Milanese, Italy.

1989 TI FAIRS

OCTOBER

Fourth European Tref, begins at 10 a.m. Oct. 7 at Kolpinghuis, Nijmegen, The Netherlands. For information, contact Veriniging TI-Gebruikersgroep, Secretariaat: Dr. E.C. van Wette, Kremersmaten 106, 7511 LC Enschede, The Netherlands.

Australia TI Fair, 2-6 p.m. Oct. 14, Pavilion, Deepdene Park, Whitehorse Rd., Deepdene, Australia. For information contact TI99/4A Users Group — Melbourne Inc., 88 Main St., Blackburn, Victoria 3130, Australia.

Third Annual CPUG Computer Expo, 7 a.m.-2 p.m. Oct. 15 at Carlisle Fairgrounds on Clay Street in Carlisle, Pennsylvania. Sponsored by Central Pennsylvania 99/4A Users Group, co-sponsored by Cumberland County Amateur Radio Service and 6th Annual Cumberland County Hamfest. For information, contact Central Pennsylvania 99/4A Users Group, P.O. Box 14126, Harrisburg, PA 17104-0126 or the WIZ/TIB BBS, (717) 657-4992 or 657-4997.

NOVEMBER

Chicago TI-Faire, 9 a.m.-5 p.m. Nov. 4 at Holiday Inn, 3505 Algonquin Rd., Rolling Meadows, Illinois. Social evening Nov. 3, dinner evening of Nov. 4. Sponsored by Chicago Area TI99/4A Users Group. For information contact Sandy Bartels, Chicago Area TI99/4A Users Group, P.O. Box 578341, Chicago, IL 60657 or (312) 859-3850.

Milwaukee TI-Faire, 9 a.m.-5 p.m. Nov. 5 at Quality Inn, 5311 S. Howell Ave., Milwaukee, Wisconsin (across from Mitchell Field Airport). For information contact Gene Hitz, 4122 N. Glenway, Milwaukee, WI 53222 or (414) 535-0133.

1990 TI FAIRS

FEBRUARY

TI-Fest West '90, Feb. 17-18, Day's Inn, 88 E. Broadway, Tucson, Arizona. Sponsored by Southwest 99ers. For information, call (602) 747-5046 or the Cactus Patch BBS, (602) 795-1953, check GEnie or write P.O. Box 17831, Tuscon, AZ 85730. For room reservations, call (602) 791-7581 by Jan. 16 and mention Fest-West.

MARCH

TICOFF (TI Computer Owners' Fun Faire — The IBM & Clone Owners' Fun Faire, 9:30 a.m.-4 p.m. March 17, Roselle Park, New Jersey. For information, call Bob Guellnitz, (201) 382-5963, Art Byers (915) 528-5402 or the TICOFF BBS (201) 241-8902.

APRIL

Canadian TI-FEST, April 18, Merivale High School, Nepean, Ontario, Canada. For information, contact Ruth O'Neill, 34 McLeod St., Ottawa, Ontario, Canada K2P 0Z5 or (613) 234-8050 or CompuServe 72117,3541 or Delphi REON.

User groups and others planning events for TI/Geneve users may send information for inclusion in this column. When space is available, events will remain listed throughout the year for reference for the coming year.

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